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THE IMPORTANCE OF SOCIAL STATUS AS INDICATED BY THE RESULTS OF THE POINT-SCALE METHOD OF MEASURING MENTAL CAPACITY.[1]

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During the past year we have developed, to meet the needs of the Psychopathic Hospital, Boston, a method of measuring mental capacity which is based upon the late Dr. Huey's suggestion of a point scale. The method has been briefly described in a preliminary article,[2] and a detailed description, with report of the results of its application to about one thousand normal and pathological individuals, is in preparation and will be published in book form by Warwick & York, Baltimore, early in 1915.

In contrast with the Binet-Simon measuring scale of intelligence, the new scale consists of a single series of tests which may be given to individuals ranging in age from four

[1]Being contributions from the Psychopathic Hospital, Boston, Mass., No. 65 (1915, 2). (Bibliographical Note.—The previous contribution, No. 64 (1915, 1), was by A. W. Stearns, entitled "On the Occurrence of Hallucinosis in 500 Cases of Mental Disease," published in the Journal of Nervous and Mental Diseases, January, 1915.)

[2]YERKES, ROBERT M., AND BRIDGES, J. W. *The Point Scale: A Method of Measuring Mental Capacity.* Boston Medical and Surgical Journal, 1914, Vol. 171, pp. 857-865.

to fifteen years. Credit for the individual's performance in the various tests is given according to merit, and not by the "all-or-none" method used by Binet and his associates.

The Point Scale consists of twenty tests, many of which include several parts, arranged in what appeared to be the order of increasing difficultness. It was arranged for the preadolescent period, and was not intended for the examination of adults. From the first we had in mind the possibility of a scale which should be universally applicable, but we deemed it wiser to test thoroughly the single-scale and partial-credit ideas before attempting to arrange a graded series of tests which should be equally applicable to individuals of all ages.

The Point Scale differs also from the Binet Scale in that, instead of being standardized at the start, it becomes standardized by the establishing of norms, in relation to which its results are stated.

We present herewith the original form of record blank which was used in our preliminary work. In the second printing of this blank tests 1 and 2 were reversed, since it was evident that young children entered upon the work more favorably if first of all presented with the picture materials. In two of the remaining tests a change in the order of parts was made: in test 6 fork and horse were interchanged, while in test 17 obedience and charity were interchanged.

The following brief description by tests, with indication of the materials used and the method of crediting response, will give the reader a fair knowledge of the scale, although it will not suffice as direction for the satisfactory application thereof.

Test 1 consists of three sentences graded in difficultness. For the perfect repetition of each two points credit is given. The maximum score for this test is therefore six points.

Test 2 makes use of the three Binet pictures. For the enumeration of the objects in a picture, one point credit is given; for the description of a picture, two points, and for interpretation in addition to description, three points. The maximum credit for the test is nine points.

Test 3 is one in which the digits are presented orally at the rate of about two per second, and the subject is allowed to repeat them immediately after the series has been presented.

One point credit is given for each group correctly repeated. In case of failure in one group, a second trial with a group of the same size is allowed. The maximum credit for the test is five points.

Test 4 is a combination comparison test in which one point credit is given for each correct comparison. In order to avoid the chance of guessing, two correct judgments are required. For this test the maximum credit is three points.

Test 5 demands the copying of the Binet square and diamond. For recognizable reproductions fulfilling certain definite requirements, one point credit is given; for reproductions superior in certain definite respects, two points. The maximum score for the test is therefore four points.

Test 6 demands the defining of four words. One point credit is allowed for each definition by use, and two points for each definition superior to use, as, for example, by description. The maximum credit for the test is eight points.

Test 7 makes use of the three pairs of Binet pictures and requires judgments of preference on the basis of aesthetic feeling. One point credit for each correct judgment makes the maximum score for this test three points.

Test 8 makes use of the Binet drawings in order to test the detection of missing parts. One point credit is allowed for each correct response, thus making the maximum for the test four points.

Test 9 requires free association of maximum rapidity. Credit is allowed according to the number of words given, ranging from one to four points.

Test 10 demands the comparison of pairs of objects. Two points credit is allowed for each comparison in which two correct differences are given. The maximum credit for the test is six points.

Test 11 requires the individual to count backward from 20 to 1. The credit for this performance is four points; or from 15 to 1, three points; from 10 to 1, two points, and from 5 to 1, one point.

Test 12 is an attempt to measure the individual's ability to comprehend and respond intelligently to the following questions:

BOSTON STATE

DATE.....

EXAMINED BY.....

NAME..... DATE OF BIRTH.....

TEST — CREDITS

1. Repeats: (*a*) It rains. I am hungry. (2)
   (*b*) His name is John. It is a very fine day. (2)
   (*c*) It is not necessary to hurt the birds.
   It is night and all the world rests in sleep. (2)

2. Reaction to three Binet pictures: enumeration, (1 each); description, (2 each); interpretation, (3 each).
   (*a*)
   (*b*)
   (*c*)

3. Memory span for digits.

(*a*)	374.	581.	(1)
(*b*)	2947.	6135.	(1)
(*c*)	35871.	92736.	(1)
(*d*)	491572.	516283.	(1)
(*e*)	2749385.	6195847.	(1)

4. Compares, twice: (*a*) Lines, 5 and 6 cm. (1)
   (*b*) Weights, 3 and 12 grams. (1)
   (*c*) Weights, 6 and 15 grams. (1)

5. Copies (on back of this sheet) (*a*) square (2); (*b*) diamond (2).

6. Defines in terms of use (1 each); superior to use (2 each):
   (*a*) Chair
   (*b*) Fork
   (*c*) Horse
   (*d*) Baby

7. Chooses, twice, prettier of two pictures. (1 each)

8. Sees picture lacks: (*a*) arms; (*b*) nose; (*c*) mouth; (*d*) eyes. (1 each)

9. Gives words for three minutes: 30-44 (1); 45-59 (2);
   60-74 (3); 75- (4). 1st half minute 2d
   3rd 4th 5th 6th

10. Compares: (2 each)
    (*a*) Apple and banana
    (*b*) Wood and glass
    (*c*) Paper and cloth

HOSPITAL—PSYCHOPATHIC

RECORD BLANK FOR POINT SCALE MEASUREMENTS

MENTAL AGE.....

NATIONALITY.....SCHOOL GRADE.....TOTAL CREDITS.....

TEST	CREDITS
11. Counts backward: 20-1 (4); 15-1 (3); 10-1 (2); 5-1 (1).	
12. Comprehends questions: (2 each) (*a*) Missed train (*b*) Someone unkind (*c*) Action versus words (*d*) Forgive easier	
13. Writes (on back of this sheet) sentence containing Boston, money, river. Three words in two (2); three words in one (4).	
14. Arranges weights: two trials. All correct but one (1); correct (2). Trial 1. Trial 2.	
15. Sees absurdity: (1 each) (*a*) Three brothers (*b*) Swinging cane (*c*) Unfortunate cyclist. (*d*) Last car (*e*) guide-post directions	
16. Resists suggestions: (1 for each resistance)	
17. Defines: (*a*) Charity (2) (*b*) Justice (2) (*c*) Obedience (2)	
18. Analogies: (1 each) (*a*) Oyster is to shell as banana is to (*b*) Arm is to elbow as leg is to (*c*) Head is to hat as hand is to (*d*) Truth is to falsehood as straight line is to (*e*) Storm is to calm as war is to (*f*) Known is to unknown as present is to	
19. Draws (on back of this sheet) designs from memory, after 15 sec. exposure. (2 each)	
20. Puts dissected sentences together: (2 each) (*a*) (*b*) (*c*)	

(a) If you were going away and missed your train, what would you do?
(b) If someone has been unkind to you, and says he is sorry, what should you do?
(c) Why should you judge a person by what he does rather than by what he says?
(d) Why do we more readily forgive an unkind act done in anger than one done without anger?

For intelligent replies to each question, two points credit is allowed. For certain relatively unsatisfactory responses, only one point is allowed. The maximum credit for the test is eight points.

Test 13 requires the composition of a sentence containing the words *Boston, money* and *river*. A satisfactory sentence is credited with four points. The use of two sentences is credited with two points.

Test 14 requires the arranging in order of increasing weight of five blocks of the same size weighing, respectively, 3, 6, 9, 12 and 15 grams. A single mistake in order entitles the subject to one point credit; correct order, to two points credit. Two trials are allowed.

Test 15 gives opportunity to measure the subject's sense of humor. Five sentences are given, and in each case the subject is required to tell what is foolish about the sentence. The sentences are:

(a) A little boy said: "I have three brothers—Paul, Ernest, and myself."
(b) We met a finely dressed gentleman; he was walking along the streets with his hands in his pockets and swinging his cane.
(c) An unlucky bicycle rider fell on his head and was instantly killed; they took him to the hospital and fear that he cannot get well.
(d) It has been found that the last car of a train is damaged most in case of accident; it therefore would be better to leave off the last car.
(e) At the cross-roads was a guidepost with the following directions: "Boston 3 miles and a half. If you cannot read, inquire at the blacksmith's shop."

For an intelligent response to each of these parts of the test one point credit is given.

Test 16 consists of the presentation of the Binet pairs of lines. One point credit is given for each resistance. The maximum for the test is three points.

Test 17 requires the defining of the abstract words *charity, justice* and *obedience*. Two points credit is given for each satisfactory definition.

Test 18 requires the completion of six analogies, which are

printed in full on the record sheet. For each correct response, one point credit is given.

Test 19. The subject is required to reproduce the two Binet designs after 15 seconds' exposure. For certain partial successes, one point credit is given; for complete reproduction, two points credit for each design.

Test 20 requires the rearranging of groups of words so they shall make sense. Two points are allowed for each sentence correctly constructed.

The maximum score for the twenty tests is one hundred points, and an individual's performance is expressed in terms of the number of points achieved, and is directly comparable with the results of other individuals of the same age, sex, race and social and economic status.

The accompanying figure 1 presents the distribution of the results obtained by the examination of 468 children born to the English language and ranging in age from 4 to 15 years.[3] The figure presents the data for the sexes separately, and indicates the average performance of these individuals grouped according to years of age and sex. We have classed as of the age of 4 all individuals from 3 years 7 months to 4 years 6 months, inclusive. It is possible to obtain, and indeed we are already constructing from examinations which have been made, norms for age, sex, language, handicap, race, and social and economic status; for, although these various differences in individuals have not been satisfactorily taken into account in connection with the use of the Binet Scale, our results clearly demonstrated the necessity of considering them. It is, as will be clear in the light of the data to be presented in this paper, wholly unfair to diagnose as mentally retarded an individual whose score falls short by 20 or even 30 per cent. of the average attained by individuals of superior opportunities. It is likewise unfair to judge by the same norms, during certain periods of development, the two sexes; and it may be equally unfair to neglect language differences and racial peculiarities.

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[3]This figure differs slightly from the one for the same group of children presented in our first report. For this certain changes in classification are responsible. See for comparison Boston Medical and Surgical Journal, 1914, Vol. 171, p. 863.

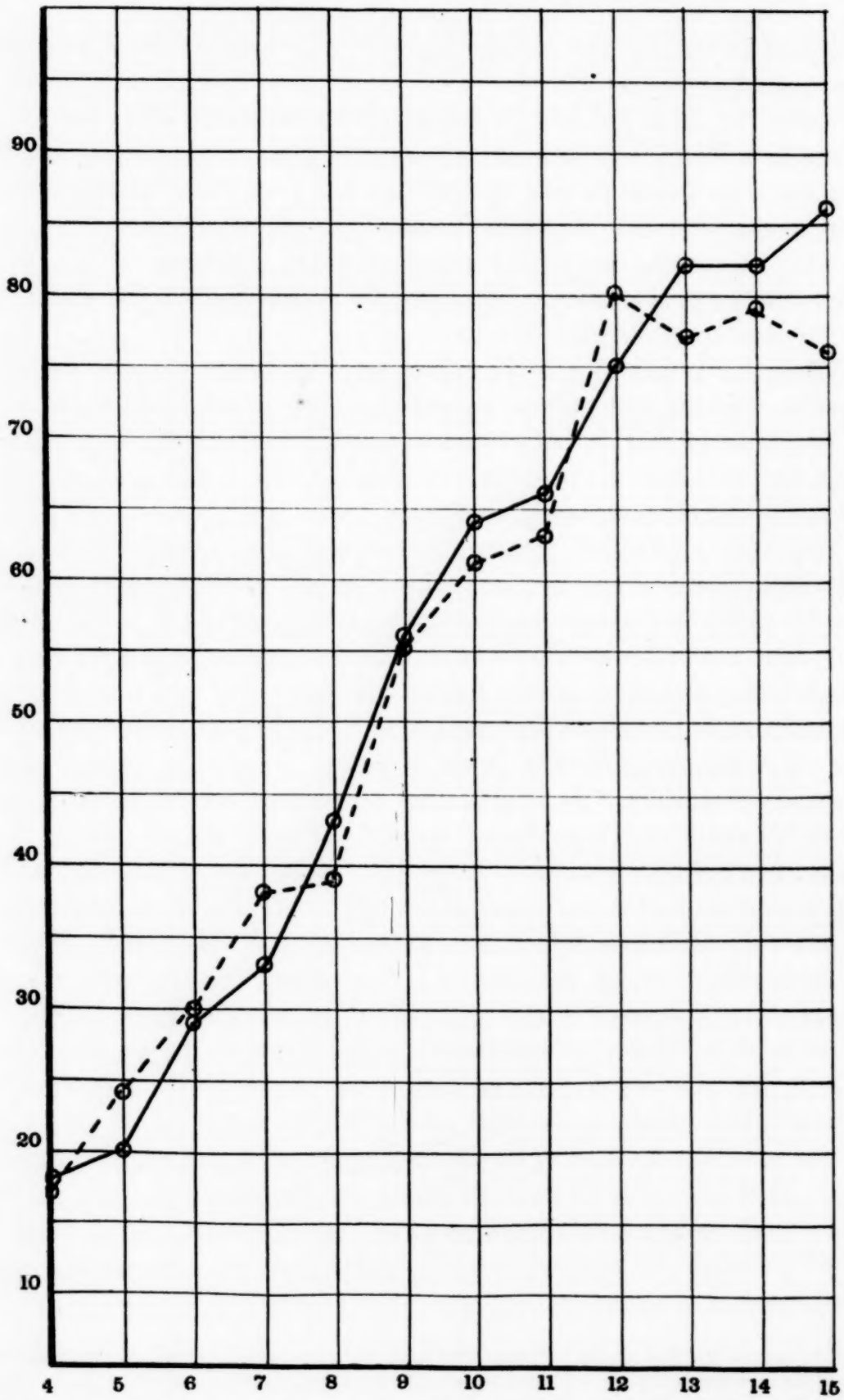

Figure 1. Norms for Children of English-Speaking Parentage in Medium to Poor Environment. Age in years on axis of abscissae; average score on axis of ordinates. Results for 468 children of one grammar school.

We propose now, in support of these contentions, to present summarily the results of point-scale examinations in two city schools[4] which differed radically in the economic and social status of their pupils. These schools were described by the city superintendent as "good" and "medium," referring, of course, to the nature of the pupils. We shall designate the group of pupils from the former as "favored" and those from the latter as "unfavored," thus escaping implications as to the relative importance of heredity and environment.

Tables 1 and 3 present the results obtained with 26 boys and 28 girls of the favored group. These 54 individuals were the only individuals examined in the school, and all were either in the kindergarten or in the first grade.

Tables 2 and 4 similarly present the detailed scores of a like number of individuals of the unfavored group. These 54 individuals were chosen from among 675 examinations in the school. Our method was to select from the unfavored group an individual of the same sex and of the same, or approximately the same, age, as a given individual of the favored group. We excluded all cases in which language difficulties were detectable. It proved impossible to match the ages exactly, but the average age for our several groups is very nearly constant. Thus, the average for the boys of the favored group is 6 years, and the average for those of the unfavored group 6 years and 1 month, while the average for the girls of each group is 6 years and 2 months.

The tables present the score for each individual test by test, and in the last column the total number of points achieved by each individual. At the bottom of each table may be read the average score by tests and for the totals.

In Table 5 we have presented these averages so arranged that the favored groups may be readily compared with the unfavored in the case of each sex; and we have indicated also in the last columns the relation of the favored to the unfavored. Thus, the symbol + indicates that the favored group achieved a higher score than the unfavored; the symbol — that

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[4]Our heartiest thanks are due the school authorities of the city of Cambridge, Mass., and especially to Superintendent M. E. Fitzgerald and Mr. A. Warren Foss.

TABLE 1.

POINT SCALE SCORES FOR BOYS—FAVORED GROUP.

No.	Age.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total.
1	4- 4	2	4	2	1			3														12
2	4- 5		2	2	2		2	3	3								3					17
3	4- 5	4	6	2	3					1												16
4	4- 5	2	3	3	2	1	4				1											16
5	4- 5	2	3	1	1			3									3					13
6	4- 7	2	3	3	2		4				1						3					18
7	4- 9	2	3			1		2	2		1						2					13
8	5- 7	4	5	3	3		4	3	4		3		4									33
9	5- 8	4	6	2	3	2	3	3	3	2	4		2		2		3					39
10	5- 8	4	6	4	1	1	4	3	4		3	1	2		2		2		1			38
11	5- 9	4	4	3	3	4	7	3	3	1	1	1	1				1			1		37
12	5- 9	4	6	2	3	1	4	3	3	1	4	3	4			3						41
13	6- 1	4	6	5	3	1	4	3	2	2	2	4	2		2		3			2		45
14	6- 2	6	4	3	3		4	3	4	1	5	4	2		2					1		42
15	6- 3	4	6	5	3	3	4	3	2	2	4	2	5		1					1		45
16	6- 4	4	6	3	3	2	4	3	4	2	3	2	2	4			1		1	1		45
17	6- 4	4	7	4	3	2	5	3	4	1	2	2	3	4	2				1	1		48
18	6- 6	4	7	4	1	2	4	3	3	2	6	2	4		2		2	2	1	1		50
19	6- 8	4	8	3	3	3	5	3	4	2	6	4	4	2		1	3	2	1	4		62
20	7- 0	4	6	5	2	3	6	3	4	3	5	4	3	2	2	2	1		1	4	2	62
21	7- 1	4	6	3	3	1	4	2	4	1	5	1	2				3			1		40
22	7- 2	4	6	3	3	2	2		2	1	4	3	3		1		1					35
23	7- 2	4	6	2	3	1	4	3	4	3	5	4	4		1		2					46
24	7- 6	4	6	4	2	1	8	3	3	3	1	1	4	4	2				1			47
25	7-11	4	6	2	3	3	5	3	4	1	5	4	2	4	1	2		2	1	2		54
26	9- 1	4	9	3	3	4	4	3	4	2	3	4	4		1	1	1	4		1		55
Averages.	6- 0	3.5	5.4	2.9	2.4	1.5	3.7	2.5	2.7	1.2	2.8	1.8	2.2	0.8	0.8	0.3	1.3	0.4	0.3	0.8	0.1	37.2

TABLE 2.

POINT SCALE SCORES FOR BOYS—UNFAVORED GROUP.

No.	Age.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
1	4-3	4	3	2			3															12
2	4-4	4	6	3	1		4		2		1		2									23
3	4-7	4	3	2	1		2	2	1													15
4	4-7	4	4	2	1	1	1	1	2									1				17
5	4-8	4	3	2			2															11
6	4-10	4	6	3			4	1														18
7	4-10	4	4	3		1	4	3	1													20
8	5-7	4	6	3	3	2	2	3	1		1	2				2		2				31
9	5-8	4	6	1	3	1	4		2	1	2					1						25
10	5-8	4	4	3	1	1	3	2	4	1			3					2				25
11	5-9	4	6	3	1	1	3		1		2							3				29
12	5-9	4	5	3	2	1	5	3	4		6										2	23
13	6-1	4	6	3	1	1	3	1	1		1		2					1				34
14	6-2	4	1	2	1	2	4	3	2	1										1		21
15	6-3	4	7	3	3		4	3	3		1	4				1						33
16	6-4	4	5	2	1	1	3	2	3		1	1										23
17	6-5	4	7	3		2	6	1	3	1	3		2					3				35
18	6-6	4	6	2	1	1	5	1	3	1	3		2				1	3				33
19	6-8	4	6	3	3	2	4	3	4	1	4											34
20	7-1	4	6	4	1	1	4	3	4	2	4	4	2					2				41
21	7-1	4	6	5	3	3	2	3	4		2	2	1				2			1		38
22	7-3	4	6	3	3	1	3	3	1	1	2	4	1			2		3		1		38
23	7-5	4	6	3	3	1	4	3	2		3	4	1			1	3				2	40
24	7-6	4	6	3	1	3	4	3	3	1	5	4	3					3		1	1	45
25	7-11	4	6	4	3	2	4	2	3	1	4	4	2			1	1	3			1	45
26	9-1	4	8	4	1	4	4	3	4	1	6	4	5	4			2			2	2	58
Averages	6-1	4	5.3	2.8	1.5	1.2	3.5	1.9	2.2	0.5	2	1.3	1	0.2	0.3	0.3	1	0	0.2	0.3	0	29.5

TABLE 3.

POINT SCALE SCORES FOR GIRLS—FAVORED GROUP.

No.	Age.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
1	4-9	4	4	3	3	1	4	3	4		1	2	4						1			34
2	4-10	4	4	2	3		1	3	2		1						1					21
3	4-11	2	5	3	3	2	2	3	3	2	3		2		1		3					34
4	4-11	4	6	3	1	4		3		1	3	1	2				2		2			32
5	5-2	4	3	2	2	1	4	2		1	2						2					23
6	5-3		6	1	1	1	3	2	2		3	1										20
7	5-4	4	4	5	3	2	4	3	3	1	6	4	2		2		1					44
8	5-10	4	6	3	2	1	8	3	3		2	2	3		1				1			39
9	5-11	4	6	4	1	1		3	4	1	2	2	4				1		1			34
10	6-0	4	3	3	3	3	4	3	2		3	4	2									34
11	6-0	4	7	2	1		4	3	4		1		2				2					30
12	6-0	4	6	2	2	1	5	3	4	3	5	1	2		1		2					41
13	6-1	4	3	2	3	2	4	3	4	3	3	4	4		1		1		1	1		43
14	6-4	4	5	3	3	1	4	3	2	1	3	1	2			1			1			34
15	6-4	4	6	4	3	3	4				3	4	1		1		3		1	1		38
16	6-5	4	6	2	1	1	3	3	4				1		1							26
17	6-5	4	3	2	3	3	4	3	4		6	4	4		2	1				2		45
18	6-5	4	6	5	3	2	8	3	4	4	5	4	2		1	2	1		1	3		58
19	6-5	4	6	3	3	2	4	3	4	3	4	2	6		2	3		2		2		53
20	6-6	4	6	4	1	1	6	3	4	1	3	1	3		2	1	3			1		44
21	6-9	4	6	4	3	3	7	3	3	4	6	4	4		2	2	2		4	1		62
22	6-9	4	5	3	3	2	4	3	4	2	5	2	4		2					2		45
23	7-0	4	6	4	1	3	4	3	4	4	3		3		2		3		1			45
24	7-1	4	6	2	3	2	4	3	3	1	5	4	3		2		3		1	1		47
25	7-3	4	6	3	3	2	5	3	4	2	6	4	2			1	3	2				50
26	7-7	4	6	5	3	2	4	3	3	2	5		3		2		2					44
27	7-8	4	6	5	3	2	4	3	4	2	5	4	3		1		3	2	1	2		54
28	7-8	4	8	3	3	2	7	3	4	4	6	4	4		2	1	3	4	3	2	4	71
Averages	6-2	3.8	5.4	3.1	2.4	1.8	4.1	2.8	3.1	1.5	3.6	2.1	2.6	0	1	0.4	1.5	0.4	0.7	0.6	0.1	41.0

TABLE 4.

POINT SCALE SCORES FOR GIRLS—UNFAVORED GROUP.

No.	Age.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total.
1	4- 8	4	5	3	3		4	2		1	1											23
2	4-10	4	3	4	1		3	3	3	2	2		1				2					28
3	5- 0	4	7	2	3		2		1	1	2		2									24
4	5- 1	4	3	5	1	1		3	1		1						2					21
5	5- 2	4	4	2		1	3	3	3	1	1											22
6	5- 4	4	5	4	1	1	4	2	3	1			1									26
7	5- 4	4	6	3	3	2	4	1	3	2	1	2	2		1							34
8	5- 9	4	7	3	1	1	4	3	4	2	1						2					32
9	5-10	4	6	2	1	1	8	2	3		2		2				2			2		35
10	5-10	4	6	2	3	1	1	3	3		3		2		2					1		31
11	5-10	4	6	3	1	3	3	3	2		3	2	2									32
12	5-11	4	4	4	1	2	4	3	4	1							1					28
13	6- 0	4	6	5	3	1	2	3	4	1	1											30
14	6- 1	4	3	4	3	2	3	3	4	1	2	2	2									33
15	6- 1	4	5	2	3	2	4	2	4	1	2	2	2		1	1	3		1			39
16	6- 5	4	6	4	1	2	4	3	4	1	1	4	4		2		2		2			44
17	6- 6	4	5	4	3	4	4	3	4	2	1	3	1									38
18	6- 6	4	6	2	3	2	4	1	2	1	1											26
19	6- 6	4	6	1	1	3		3	4	2	2	2	2				2			1		33
20	6- 7	4	3	2	1	2	4	3	3			1	2									25
21	6- 8	4	6	1	3	3			1			4					1					23
22	6- 9	4	6	3	3	3	4	3	4	3	1		3			2	2		2			43
23	7- 1	4	6	4	1	2	4	3	4	2	4	4	4		1		3			2		48
24	7- 1	4	6	2	3	1	4	3	4	1	3	4	1		2		2					40
25	7- 4	4	6	3	1	2	4	2	3	1	3	3	2			1	1					36
26	7- 7	4	6	4	3	1	4	3	4		2	2	2		2		3					40
27	7- 9	4	6	4	1	1	4	3	4	1	5	2	2				2					39
28	8- 0	4	6	4	3	1	2	3	4	1	2	2	3		2		2		1			40
Averages.	6- 2	4	5.4	3.1	2	1.6	3.3	2.5	3.1	1	1.7	1.4	1.5	0	0.5	0.1	1.1	0	0.2	0.3	0	32.6

TABLE 5.

Averages for Favored and Unfavored Groups for Each Test and for Total Scores.

Test.	Favored Boys.	Unfavored Boys.	Favored Girls.	Unfavored Girls.	Relation of Favored to Unfavored. Boys.	Relation of Favored to Unfavored. Girls.
1	3.5	4.0	3.8	4.0	−	−
2	5.4	5.3	5.4	5.4	+	=
3	2.9	2.8	3.1	3.1	+	=
4	2.4	1.5	2.4	2.0	+	+
5	1.5	1.2	1.8	1.6	+	+
6	3.7	3.5	4.1	3.3	+	+
7	2.5	1.9	2.8	2.5	+	+
8	2.7	2.2	3.1	3.1	+	=
9	1.2	0.5	1.5	1.0	+	+
10	2.8	2.0	3.6	1.7	+	+
11	1.8	1.3	2.1	1.4	+	+
12	2.2	1.0	2.6	1.5	+	+
13	0.8	0.2	0.0	0.0	+	=
14	0.8	0.3	1.0	0.5	+	+
15	0.3	0.3	0.4	0.1	=	+
16	1.3	1.0	1.5	1.1	+	+
17	0.4	0.0	0.4	0.0	+	+
18	0.3	0.2	0.7	0.2	+	+
19	0.8	0.3	0.6	0.3	+	+
20	0.1	0.0	0.1	0.0	+	+
Totals....	37.2	29.5	41.0	32.6		

it achieved a lower score, and the symbol = that there was no difference.

From this table it appears that in only one test were the unfavored groups superior to the favored. In one test the results for the two groups of boys were equal, and in two tests the results for the girls were equal, while in yet another neither group scored.

The averages of the total scores differed markedly, that for the favored group of boys being 37.2, and that for the unfavored group of boys 29.5, that is, 21 per cent. less. The favored group of girls attained an average score of 41.0, while the unfavored group attained only 32.6, that is, about 20 per cent. less. These differences are indeed startling, and they become even more impressive when, instead of comparing groups which include children ranging in age from 4 years up to 9, as in tables 1 to 4, we compared only the 6-year individuals of the two schools in question. The data for this comparison appear only in part in tables 1 to 4.

In the favored school 24 individuals were examined who

fell within the age limit of 5 years 7 months to 6 years 6 months. The range of the scores for the 11 boys in this group was from 33 to 50 points, with an average of 42 points; that for the 13 girls of the group was from 26 to 58 points, with an average of 40 points.

In the unfavored school there were examined 30 boys and 25 girls 6 years of age. The range in the case of the boys was from 11 to 39 points, and in the case of the girls 13 to 44 points, the averages being, for the boys, 29, and for the girls, 30 points.

From the individual records it appears that all of the 6-year-old boys in the unfavored group are below the average for the boys of the same age in the favored group, while of the girls only two in the unfavored group are above the average for the favored.

Differences in economic or social status seem, then, to be correlated with differences in mental capacity, as measured by the point scale, which may amount to as much as 30 per cent. In other words, at and about the age of 6 years the favored individuals do from a quarter to a third better in the point-scale examination than do the unfavored. This amount of difference, viewed in the light of the norm presented in figure 1, is extremely interesting and significant, for it may be observed that the increase of score from year to year, starting with from 20 to 30 per cent. at the age of 4, diminishes to approximately 10 per cent. by the time the age of 10 is reached. It appears, then, that the intellectual difference under discussion is equal at least to the amount of development during the fifth year of life, and possibly to even more than that.

From the data which have been presented, and the statements which have been made, it is obvious that to state the mental capacity of an individual from the unfavored group in terms of the norm for the favored group would be extremely unfair, since only those attaining the highest scores among the "unfavored" are equal to those with the lowest scores among the "favored."

The purpose of this paper is to demonstrate by the use of this single small collection of data chosen from approximately

1000 examinations the necessity for the use of norms in connection with mental examinations. The Binet Scale does not lend itself to the employment of norms; the Point Scale has this advantage, and we wish to insist, as the result of the analysis of our data, that norms for sex, language, race, and social and economic status are quite as important as are norms for age. We propose to make use of such norms, in connection with our examining at the Boston Psychopathic Hospital, just as rapidly as they can be satisfactorily established.

It is our conviction that in the greater part of the practical work of mental examining which has been done during the past ten years far too little attention has been paid to the problem of comparability. We proprose so to standardize our point-scale method that the mental ability of a subject may be expressed in its relation to the group in which he belongs; and the relation of that, in turn, to other increasingly dissimilar groups should be available for the use of the examiner. The groups in question may be restricted as closely as need demands. It is, for example, not adequate for us in the school system of the American city to treat all individuals as though born to the English language. Indeed, it may ultimately become clear that, while applying the same scale to individuals of every race, we should evaluate our results always in the light of definitely established racial norms.

It has not seemed feasible to discuss in this brief paper the work of other students of social and economic status. We have not overlooked the fact that there is an important, although extremely unsatisfactory, body of literature on the subject.[5]

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[5]See W. STERN. The Psychological Methods of Testing Intelligence. Baltimore, 1914, p. 50.
G. M. WHIPPLE. Manual of Mental and Physical Tests. Baltimore, 1914, under "sociological status."

A PSYCHOLOGICAL STUDY OF BRIGHT AND DULL PUPILS.

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The purpose of this study is to ascertain what mental differences between groups of bright and dull pupils can be discovered by the use of group tests. Terman and others have made similar studies on smaller groups of children. It has been our purpose to make the study in several high schools, as well as in the grades, thereby testing pupils at work under different conditions as well as pupils of different ages. The groups were selected on the basis of success in school work. The bright groups include the pupils most successful in school work; the dull groups, those least successful. The criterion of success used was school marks. We have considered the most successful pupils to be those having the highest marks for the school year; the least successful pupils, those having the lowest marks.

The tests used are those described in the author's *Examination of School Children*—tests of logical memory, rote memory, word-building, three types of association tests, and, in addition, four completion tests. Three of the latter are from Whipple's *Manual,* the other from Franz.

The tests were given in the following schools: (1) The high school at Mexico, Mo. The best ten and the poorest ten pupils were selected for the tests. (2) The high school at Kennett, Mo. The best four and the poorest four in each high school class, *i. e.,* freshman, sophomore, junior and senior, were selected. (3) The high school at Hannibal, Mo. The selection was the same as at Kennett. (4) A group of the brightest and a group of the dullest pupils in the Westport High School of Kansas City, Mo. The selection was made on the basis of a teacher's judgment. (5) The best and poorest grade pupils of the grade school at Mt. Washington, Mo. (6) The twelve-

year-old pupils distributed through four grades of the Mexico schools. Since different groups of tests and, in some cases, different tests of the same kind were used, the results are recorded separately for the different schools. The results are then brought together in one table:

TESTS IN MEXICO HIGH SCHOOL.

	Word building.	Logical memory.	Completion test.	Substitution test.	Opposites test.
Poor group	8.8	43.8	45.6	31.1	9.3
Good group	12.0	54.1	63.0	35.3	11.8
Good per cent. better*	36.0	23.0	39.0	13.0	24.0

*By "Good per cent. better" in these tables we express in per cent. the amounts by which the good groups excel the poor groups.

There were given at Mexico two word-building tests, with the letters o, e, u, b, n, r and a, e, i, c, h, s. There were four logical memory tests with the stories, *The Brave Korean, The Golden Goose, The Boy Who Would Not Drink* and *The Two Ways*. The four completion tests were: *The Dandelions, The Strength of the Eagle* and *Why the Mole Is Blind*, from Whipple, and *The Donkey and the Grasshopper* from Franz's *Handbook of Mental Examination Methods*. There were two substitution tests and three opposites tests, as described in the *Examination of School Children*.

TESTS IN KENNETT HIGH SCHOOL.

	Word-building.	Free association.	Controlled association.	Substitution.	Rote memory.	Logical memory.	Ink-blots.	Completion test.
Poor group	14	50	12	31	40	39	9	47
Good group	18	59	13	35	46	48	8	59
Good per cent. better	28	18	8	11	15	23	—12	25

In addition to the same tests used at Mexico, there were tests of free association and the genus-species and part-whole tests of the controlled association tests, and tests of rote memory and the ink-blot test.

TESTS IN HANNIBAL HIGH SCHOOL.

	Substitution.	Controlled association.	Completion test.
Poor group	26.8	13.8	53.8
Good group	34.4	15.6	66.2
Good per cent. better	28.0	13.0	23.0

The three tests used at Hannibal were identical with the corresponding tests used at Kennett.

TESTS IN WESTPORT HIGH SCHOOL.

	Logical memory.	Controlled association.	Free association.	Rote memory.	Word-building.	Substitution.	Cancellation.
Poor group.....	34.5	29.5	21.5	41.0	11	24	26
Good group.....	46.0	37.8	23.0	42.0	13	28	26
Good per cent. better	33.0	28.0	7.0	2.4	18	17	0

The logical memory was the same four tests used at the other schools and *The Marble Statue* in addition. Controlled association did not include the opposites A, B and C. There was only one each of free association, word-building and substitution tests. The rote memory was the same as at Kennett, and the cancellation test was the A-test.

TESTS IN MT. WASHINGTON (GRADE SCHOOL).

The pupils in this school were compared in two tests only, the logical memory and completion tests. There were four tests in each. The logical memory tests were made in grades three, five and seven; the completion tests in grades four, five, six and seven. The best five and the poorest five in each grade were selected for comparison. In the memory tests two methods of selection were used. One selection was on the basis of the teacher's daily grades, the other on the basis of the average of four examination grades.

When the pupils were selected on the basis of the daily grades, the good groups made an average logical memory record 23.5 better than that made by the poor group. When the selection was on the basis of examination grades, the good group was found to be 22.6 better than the poor group.

In the completion test the good groups excelled the poor groups, as shown in the following table:

Grade.....	4	5	6	7
Good per cent. better.....	31.9	18.6	38	66

The Distribution of Ability in Twelve-Year-Old Pupils.

In the Mexico schools forty-four pupils twelve years old were found to be distributed through four grades. These pupils were given simultaneously four logical memory tests, four completion tests, two word-building tests and four opposites tests. The results are shown in the following table:

Grade.	No. tested.	Completion.	Logical memory.	Word-building.	Opposites.
4.....	4	17.8	22.2	3.5	2.5
5.....	10	41.6	33.0	8.5	6.4
6.....	23	50.4	34.2	6.6	7.9
7.....	7	59.9	42.5	7.5	9.4

It will be seen from the table that the twelve-year-old children in the upper grades have much greater ability than those in the lower grades.

If, instead of comparing the groups, we compare the individuals of the groups, we can learn how much overlapping there is between the groups. This I have done, and I find that 48 per cent. of the pupils making up the poor groups make a record as good as that of the lowest of the corresponding good groups. Twenty per cent. of the poor pupils make a grade as good as the average of the corresponding good groups. These figures are obtained by combining the results of the various tests. If only the more important tests, logical memory and completion tests, are considered, there is much less overlapping. In the completion test only a few of the poor pupils make the lowest grade of the good group, while a much smaller number—in many classes, none—made the average of the good groups. However, it is evident that some members of the poor groups belong to the good groups and some of the good groups belong among the poor groups.

A comparison of the ages of the pupils shows that the good pupils are a trifle more than a year younger than the poor pupils. At Kennett, the groups average the same age; at Hannibal, the good pupils average eight-tenths of a year younger; at Mexico, nine-tenths of a year, and at Westport High School, the good pupils are two and a half years younger.

There were more girls than boys in the groups studied. In

all there were fifty-four pupils in the good groups, twenty-two boys and thirty-two girls, while in the poor groups there were twenty-four boys and twenty-eight girls. There were, therefore, about 14 per cent. more boys, relatively, in the poor groups.

School.	Logical memory.	Rote memory.	Word building.	Completion.	Substitution.	Opposites (only).	Controlled association.	Free association.	Ink-blots.	Cancellation.
Mexico	23	...	36	39.0	13	24	..	...	..	..
Kennett	23	15.0	28	25.0	11	..	8	18.0	—12	..
Hannibal	..	...	..	23.0	28	..	13	...	..	..
Westport H. S.	33	2.4	18	...	17	..	28	7.0	..	0
Mt. Washington Grade School.	23	...	..	15.2*	..	..	..	...	..	..
Averages	26	8.7	27	29.0	17	24	16	12.5	—12	0

*Not counted in the average.

The figures in the above table show how much the good group excelled the poor group in the various tests. They show the value of the different tests as one means of separating the dull from the bright pupils.

A study of the results shown in the preceding tables makes it clear that the mental differences between bright and dull pupils can be ascertained by means of simple group tests. The completion, word-building, logical memory and controlled association tests are evidently most valuable for this purpose. Ability to do the cancellation test has no relation to the abilities shown in the other tests. Several other recent experiments of the writer sustain this conclusion. In some tests it seems to show an inverse relation to the other tests. The results of the ink-blot test also show a negative relation to the other tests. Ability to do well in this test is clearly related to age, young children doing better. It is possible that the dull high school pupils are more like younger children; possibly they are merely uncritical.

The practical outcome of this study is that mental tests can be made very valuable to teachers, principals and superintendents in getting supplementary evidence of pupils' abilities. And this additional evidence will be especially helpful in deal-

ing with the apparently bright and the apparently stupid. Some pupils that seem to be dull are not dull, but are the victims of circumstances. And sometimes the apparently bright pupil is only mediocre, but has succeeded because of unusually favorable opportunities. Sometimes the differences between pupils is only one of laziness. Different habits of study may at other times be the cause. In all cases careful mental tests will give valuable additional information. In teaching children and advancing them through the grades of the public school, all information about them that can be secured should be utilized.

The writer is under great obligation to several teachers who co-operated in the study. The tests were administered by Principal B. T. Ritter, at Mt. Washington; Miss Eleanor Kleeman, at the Westport High School; Miss Aretta Watts, at Hannibal; Miss Margery Graham, at Kennett; by Misses Gill and Mason and Mr. Bruner, at Mexico. Most of these teachers are graduates of this university, and all had been trained for the work in our laboratory.

THE VALUE OF THE BINET MENTAL AGE TESTS FOR FIRST GRADE ENTRANTS.

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In May and June of 1913 the entire membership of a certain Oakland kindergarten were given Terman's adaptation of the Binet mental age tests. The purpose was to discover whether there was any correlation possible between such tests and the progress of the subjects during their first year of school. If such tests proved to be prophetic, could they be rendered of service in fitting school entrants to their environment?

The school in which the kindergarten was located was a large school in one of the worst parts of town, where there is a mixture of Portuguese, Italians and colored, where poverty is considerable, and where moral conditions are bad.

The following were the results secured, together with information concerning nationality, families, employment of fathers, etc.:

TABLE I.

		Age.	Mentality.	Nationality.	Father's employment.	Family, etc.
1.	Lawrence P.....	5.71	+ 1.7	American.	Bridge inspector.	Good.
2.	Lilian McM.....	5.6	+ 1.59	Irish-American.	Foundry.	Good.
3.	Rosa V.....	5.17	+ 1.59	Port. Isl.	Secretary.	
4.	Joe M.....	5.66	+ 1.08	Port.	Laborer.	Two older girls subnormal. Poor.
5.	Gladys P.....	5.47	+ 1.01	Colored.	Porter.	
6.	Frances T.....	6.	+ .96	Colored.	Cook.	
7.	Agnes F.....	5.46	+ .42	?	?	
8.	Freda N.....	5.97	+ .36	German Jew.	?	
9.	Norman C.....	5.15	+ .32	?	?	
10.	Dorothy L.....	5.5	+ .29	Swedish.	Carpenter.	
11.	Manual J.....	5.77	+ .08	Syrian.	Storekeeper.	Older children subnormal.
12.	Emily D.....	5.46	+ .06	?	?	Dirty.
13.	Helen D.....	5.92	— .02	Polish.	Carpenter.	
14.	Chas. T.....	5.7	— .23	Austrian.	Butcher.	Older brother quite subnormal.
15.	Cardwell T.....	5.33	— .32	Colored.	Porter.	Very bad boy.
16.	Katie V.....	5.93	— .44	Austrian.	Janitor.	
17.	Fulvia V.....	4.83	— .55	Italian.	Cannery.	
18.	Robert L.....	5.5	— .6	American.	Retired.	
19.	Frances W.....	5.51	— .69	?	?	
20.	Dunco M.....	5.4	— .93	Austrian.	Car cleaner.	
21.	Mary B.....	5.93	— .98	Italian.	Laborer.	
22.	Ethel G.....	5.	— 1.	English.	Father divorced.	Mo. insane; one brother f. m.; one bad.
23.	Angelina F.....	7.	— 1.28	Italian.	Laborer.	
24.	Catherine P.....	6.6	— 1.36	Unknown.	(Institut. child.)	
25.	Ionella L.....	6.54	— 1.49	American.	Railroad clerk.	
26.	Geo. Gardner....	6.84	— 1.6	(See No. 22.)		
27.	Joe P.....	7.17	— 1.87	Port. Isl.	Saloon.	
28.	Manuel F.....	7.16	— 1.97	Port. Isl.	Railroad yards.	
29.	August R.....	6.3	— 2.	Port. Isl.	Laborer.	
30.	Tony F.....	6.95	— 2.49	Port.	Railroad.	
31.	Joe F.....	6.77	— 3.14	Port.	Carpenter.	
32.	Joe S.....	7.17	— 4.05	Port.	Mo. in cannery.	Poor and dull.
33.	Katherine Van...	7.		Sent to home for f. m.; father insane; brother f. m.		
34.	Lew S.....	6.2		Had not enough English to answer anything, but would have tested above age.		

From the first two columns the mental quotient[1] was computed, as follows:

TABLE II.

1...	1.29	7...	1.07	13...	.99	19...	.87	25...	.77	31...	.53
2...	1.28	8...	1.06	14...	.96	20...	.82	26...	.76	32...	.43
3...	1.30	9...	1.06	15...	.95	21...	.83	27...	.73		
4...	1.19	10...	1.05	16...	.92	22...	.80	28...	.72		
5...	1.18	11...	1.01	17...	.88	23...	.81	29...	.68		
6...	1.16	12...	1.00	18...	.88	24...	.79	30...	.64		

We find that numbers 3 and 23 show a discrepancy with the mental acceleration and retardation in column 3. Number 3 is markedly younger than those just above her, and so her percentage of advance on her actual age is necessarily greater. Similarly, number 23 is much older than the child just above her, and her retardation is less in proportion to her years.

In general, the following facts are noticeable from the original examinations as given in the first three columns:

1. Out of 34 children, 13 tested mentally above their phys ical age.

2. Making allowance for foreign birth and poor environment, one may safely say that half of the class were of right mental age or over.

3. Calculating by the mental quotient, we find that half of the class showed a mental efficiency of over 90 per cent.

4. If we take all children as normal who tested within one year of their right mental age, we find one-half of the class normal, one-half either below or above normal.

5. But the one-half above and below are not equally divided. They are in the relation of, above: below::5:12. That is, the distribution of the level of intelligence hardly corresponds with the results of Binet, Bobertag and Goddard. The comparison would be as follows:

TABLE III.

Bobertag	Above	:	below	::	25	:	22	::	1	: .88
Goddard	Above	:	below	::	27	:	31.5	::	1	: 1.17
Binet	Above	:	below	::	21.5	:	27.5	::	1	: 1.28
Hicks	Above	:	below	::	5	:	12	::	1	: 2.40

[1]See WILLIAM STERN. *The Psychological Methods of Testing Intelligence.* Baltimore: Warwick & York, 1914.

This discrepancy might arise from the conditions of poverty and wrong living represented in this particular kindergarten class.

6. Figures on sex agreed with the usual fact of a majority of males among the exceptional. Of 16 boys and 18 girls in the class, 5 boys were mentally in advance of their age, and 8 girls. Of the 12 children more than one year retarded 7 were boys.

7. Nationality did not seem to be of particular importance. Of the American, 3 were above age (counting number 7 and number 9), and 4 American or English were below. However, there is a larger number of Portuguese represented among the ones far down on the scale, and also a larger number of day laborers.

8. The limiting age in our kindergartens is supposed to be 6 years. Every child more than 1 year retarded mentally was over 6; and of all the children who were over 6, all but 2 were more than 1 year retarded. One of these two was the Chinese boy who did not speak English, number 34.

9. At the time of examining it was agreed by teacher and psychologist that number 15 was of the moral imbecile type; that numbers 18, 25, 26, 30, 32 and 33 were feeble-minded, and that number 22 was questionable. The mother of number 18 has probably falsified his age record. Last year he was recorded as 6.5 years, but this year she has dropped a year.

The above were the facts apparent from the first study of the class. Now, a year later, they have been investigated again, to discover just what progress they have made, and whether that progress corresponds with results of last year's examination. The first column gives the child's number; the second, his acceleration or retardation; the third, his present grade; the fourth, the date on which he entered his present grade; the fifth, the date on which, according to his physical age, he should have entered his present grade; the sixth, the teacher's judgment on his progress.

Numbers 12, 19, 22 are eliminated for lack of recent data, and numbers 33 and 34 because the former entered a State institution and the latter did not have English enough to be tested a year ago,—leaving 29 children.

TABLE IV.

No.	Accel.	Grade.	Entered.	Should have entered.	Progress.
1	1.7	1B	Jan. 14	Aug. 14	Good beyond average.
2	1.59	1B	Jan. 13	Aug. 13	Good beyond average. (Has gone to another school.)
3	1.59	Kdg.	Jan. 13	Aug. 13	(Despite high mental rating, this little colored girl has had to remain in kindergarten over a year. She has now barely reached the place where she can progress into 1A—where she belongs by physical age.) A liar.
4	1.08	1A	Jan. 14	Jan. 14	Very slow, but intelligent. Will pass into 1B by giving him special attention.
5	1.01	1A	Jan. 14	Jan. 14	Very slow, but intelligent. Will pass into 1B by giving him special attention.
6	.96	1A	Aug. 13	Aug. 13	Must stay in 1A all this year because of marked lack of application.
7	.42	?			Moved out of town, but entered 1A in August 13, and progressed normally as long as in school.
8	.36	1B	Jan. 14	Jan. 14	Thoroughly good progress.
9	.32	?			Same as No. 7.
10	.29	1A	Jan. 14	Jan. 14	Normal progress, not brilliant.
11	.08	1A	Jan. 14	Jan. 14	Will pass into 1B at end of year only with special help.
12	.06	?			(Sent home for pediculosis before Christmas and has never returned. Fair progress while in school.)
	Ret.				
13	.02	1B	Mar. 14	Jan. 14	Capable, but pretty slow.
14	.23	1A	Jan. 14	Jan. 14	Normal progress.
15	.32	1A	Jan. 14	Aug. 14	Better behaved. Has made some progress, but cannot pass without special help.
16	.44	1A	Jan. 14	Aug. 13	Irregular. Does poor work. Will not be promoted.
17	.55	Kdg.	Jan. 13	Aug. 13	Has progressed little in kindergarten in 1½ years, but will be promoted to 1A.
18	.6	1A	Jan. 14	Jan. 14	This boy was in the special class for some months in the fall, making little progress. His mother is deeply mortified at his being classed with defectives, so he has been allowed to try 1A work. He has done nothing and cannot possibly be promoted. His real age is probably one year more than indicated, which would change his place on the list from 18 to 26.
19	.69				(Has gone into convent school; no record.)
20	.93	Kdg.	Jan. 13	Jan. 13	Apparently no progress during his first half-year in kindergarten, but this year has done well and will enter 1A.

21	.98	1A	Aug. 13	Aug. 13	Teacher reports normal progress at present, yet she will have spent a year in doing 1A work.
22	1.				Out of school most of this year with Hawaiian itch. The insane mother has little idea of care for the children. While in kindergarten the child was below normal in progress, yet impressed one with the probability of better work if she were in a different environment.)
23	1.28	1A	Aug. 13	Aug. 12	Has been reported as normal and will be promoted in June. But has taken a whole year to do one term's work. According to physical age, she should now be finishing 2B. Parents may have lied about age, making her a year too old. She is very tiny, and this is common with Italians.
24	1.36	1A	Aug. 13	Jan. 13	Less than normal progress even yet. May not leave 1A even in June.
25	1.49				Has been out of school most of time because too feebleminded even to improve by kindergarten instruction.
26	1.6				(See No. 22. This boy is lower grade than No. 22; undoubtedly feebleminded.)
27	1.87	1A	Aug. 13	Aug. 12	Has spent whole year in doing one term's work, and has just a chance of promotion.
28	1.97	1B	Jan. 14	Jan. 13	The only one who tested below mental age who entered the grades regularly and has progressed regularly. He is reported as normal by his teacher.
29	2.	1A	Jan. 14	Aug. 13	This boy has a chance to be promoted this June if his teacher gives him special attention, but not without.
30	2.49	1A	Aug. 13	Aug. 12	Just a bare possibility of his being promoted in June after spending one year doing one term's work. Age?
31	3.14	1A	Aug. 13	Jan. 13	Vocabularly difficulties keep him below grade, yet he will probably be promoted in June, after a year in 1A.
32	4.05	Spec.	Aug. 13	Aug. 12	Undoubtedly feebleminded. Progress poor, yet better than No. 18 while in the special class, and better than would have been at all possible in regular class work.
33					Moral imbecile. Sent to State home for feebleminded as impossible.
34	?	1A	Jan. 14	Aug. 13	Perfectly normal progress since he acquired enough English to get along.

TABLE V.

In the following table are given the dates at which each child by physical age should have entered 1A, 1B and 2A; the dates at which he should have done so according to mental age, and the dates at which he actually did so:

No.	Dates of entering 1A, 1B, 2A by physical age.	By mental age.	Actual dates of entering.
1.	Jan. 14—Aug. 14—Jan. 15	Jan. 12—Aug. 12—Jan. 13	Aug. 13—Jan. 14—Aug. 14
2.	Jan. 14—Aug. 14—Jan. 15	Aug. 12—Jan. 13—Aug. 13	Aug. 13—Jan. 14—Aug. 14
3.	Aug. 14—Jan. 15—Aug. 15	Jan. 13—Aug. 13—Jan. 14	Aug. 14
4.	Jan. 14—Aug. 14—Jan. 15	Jan. 13—Aug. 13—Jan. 14	Jan. 14—Aug. 14 (spec. help)
5.	Jan. 14—Aug. 14—Jan. 15	Jan. 13—Aug. 13—Jan. 14	Jan. 14—Aug. 14 (spec. help)
6.	Aug. 13—Jan. 14—Aug. 14	Aug. 12—Jan. 13—Aug. 13	Aug. 13—Aug. 14
7.	Jan. 14—Aug. 14—Jan. 15	Aug. 13—Jan. 14—Aug. 14	Aug. 13—Jan. 14—Aug. 14
8.	Aug. 13—Jan. 14—Aug. 14	Jan. 13—Aug. 13—Jan. 14	Aug. 13—Jan. 14—Aug. 14
9.	Aug. 14—Jan. 15—Aug. 15	Jan. 14—Aug. 14—Jan. 15	Aug. 13—Jan. 14—Aug. 14
10.	Jan. 14—Aug. 14—Jan. 15	Jan. 14—Aug. 14—Jan. 15	Jan. 14—Aug. 14
11.	Jan. 14—Aug. 14—Jan. 15	Aug. 13—Jan. 14—Aug. 14	Jan. 14—Aug. 14 (spec. help)
12.	Jan. 14—Aug. 14—Jan. 15	Jan. 14—Aug. 14—Jan. 15	?
13.	Aug. 13—Jan. 14—Aug. 14	Aug. 13—Jan. 14—Aug. 14	Aug. 13—Mar. 14
14.	Jan. 14—Aug. 14—Jan. 15	Jan. 14—Aug. 14—Jan. 15	Jan. 14—Aug. 14
15.	Jan. 14—Aug. 14—Jan. 15	Aug. 14—Jan. 15—Aug. 15	Jan. 14—Aug. 14 (spec. help)
16.	Jan. 14—Aug. 14—Jan. 15	Jan. 14—Aug. 14—Jan. 15	Jan. 14
17.	Aug. 14—Jan. 15—Aug. 15	Aug. 15—Jan. 16—Aug. 16	Aug. 14
18.	Jan. 14—Aug. 14—Jan. 15	Aug. 14—Jan. 15—Aug. 15	Jan. 14 X (Institutional)
19.	Jan. 14—Aug. 14—Jan. 15	Aug. 14—Jan. 15—Aug. 15	?
20.	Jan. 14—Aug. 14—Jan. 15	Jan. 15—Aug. 15—Jan. 16	Aug. 14
21.	Aug. 13—Jan. 14—Aug. 14	Aug. 14—Jan. 15—Aug. 15	Aug. 13—Aug. 14
22.	Aug. 14—Jan. 15—Aug. 15	Aug. 15—Jan. 16—Aug. 16	?
23.	Aug. 12—Jan. 13—Aug. 13	Jan. 14—Aug. 14—Jan. 15	Aug. 13—Aug. 14
24.	Jan. 13—Aug. 13—Jan. 14	Aug. 14—Jan. 15—Aug. 15	Aug. 13—Aug. 14 (spec. help)
25.	Jan. 13—Aug. 13—Jan. 14	Aug. 14—Jan. 15—Aug. 15	? X
26.	Aug. 12—Jan. 13—Aug. 13	Aug. 14—Jan. 15—Aug. 15	Aug. 13 X ?
27.	Aug. 12—Jan. 13—Aug. 13	Aug. 14—Jan. 15—Aug. 15	Aug. 13—Aug. 14 (spec. help)
28.	Aug. 12—Jan. 13—Aug. 13	Aug. 14—Jan. 15—Aug. 15	Aug. 13—Jan. 14—Aug. 14
29.	Aug. 13—Jan. 14—Aug. 14	Aug. 15—Jan. 16—Aug. 16	Jan. 14—Aug. 14 (spec. help)
30.	Aug. 12—Jan. 13—Aug. 13	Jan. 15—Aug. 15—Jan. 16	Aug. 13—Aug. 14 (spec. help)
31.	Jan. 13—Aug. 13—Jan. 14	Jan. 16—Aug. 16—Jan. 17	Aug. 13—Aug. 14
32.	Aug. 12—Jan. 13—Aug. 13	Aug. 16—Jan. 17—Aug. 17	Aug. 13 X
33.	Aug. 12—Jan. 13—Aug. 13	X	X
34.	Aug. 13—Jan. 14—Aug. 14	?	Jan. 14—Aug. 14

TABLE VI.—SUMMARY.

			Progress.			
			Normal.	Slow—not ret.	Retarded.	Failed.
Entered at right physical age 13	By mental age should have entered	Before 6	2	3	1	0
		Same 3	2	1	0	0
		After 4	1	1	1	1
Entered at right mental age 5	By physical age should have entered	Before 1	0	0	0	1
		Same 3	2	1	0	0
		After 1	1	0	0	0
Entered at neither right physical nor mental age 14		Entered between mental and physical age 13	5	1	5	3
		Entered before either mental or physical age 1	1			

Calculating these figures in per cents., it appears that:

TABLE VII.

	Normal progress. Per cent.	Less than normal progress. Per cent.
Entering at right physical age	37 6/13	62 7/13
Entering at right mental age	60	40
Entering at neither age	35 5/7	64 2/7
And of the whole class	44 24/29	55 5/29

A few facts may be gleaned even from these small numbers. It is apparent that when an entrant into first grade does not correspond either mentally or physically with the commonly accepted age of 6 years, his chances of normal progress are about as 1:2. If he enters at the right physical age, his chances are not greatly increased, whereas if he enters at the right mental age his chances are as 3:2. (The only child of this group who failed is number 16, a case of great irregularity of attendance.)

Suppose, for the sake of the argument, that this class of 34 children had been divided according to the judgment of the examining psychologist and the teacher and given such training as they seemed to demand. Then in August of 1913 there would have entered the grades (1A) the following: numbers 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14. Under ideal conditions the following would have been sent to institutions for the feeble-minded: numbers 25, 26, 32, 33. Numbers 3, 17, 20, 22 would have remained in kindergarten. Numbers 15, 16, 18, 19, 21, 23, 24, 27, 28, 29, 30, 31, 34 would have been put into a special class.

If this plan had been followed, certain errors would have developed. Six out of the 13 would not have been able to make the progress expected of them when they were allowed to enter first grade. Of those relegated to kindergarten, the year's experience has proved that all were wise choices. There can have been no question about the feeble-minded, though so far only 1 has been sent. Now, of the children designated for the special class, 28 and 34 would soon have shown that they could carry grade work, language difficulties being overcome, and would have been placed in first grade without any retardation. Of the others, there would have been a good chance that the stimulation of a special class would have made nearly normal progress possible for numbers 16, 21, 23, with a fighting chance for number 31. The others may need special class work for a long time to come.

Let us compute the comparative expense of the ideal plan for this past year and the one actually followed. Suppose that the unit expense of a child in a regular class is 1/42. There were 13 cases of taking double time for a term's work, or 13/42. With an attendance of 14 in the special class, the unit

of expense is 1/14. There would have been an average of 9/14 for the year. Roughly, the expense for the first plan would have been about one-half that of the ideal condition. But this does not take into account the frequency of extra help to those who went into the regular classes. This was recorded by teachers for 13 cases. All of such extra assistance must be calculated as taking just so much of the teacher's time and energy from the average pupils, and has a money value which is no less real because it is hard to compute.

Now, the actual distribution at the present time is as follows:

Class A (1B)—Numbers 1, 6, 8, 13, 28. (Moved, but of same progress—numbers 2, 7, 9.)

Class B (1A)—Numbers 4, 5, 10, 11, 14, 15, 29, 34.

Class C (1A)—Numbers 16, 18, 21, 23, 24, 27, 30, 31 (and in this same class is another group of subnormals who do not appear in the kindergarten list, so that the teacher is actually endeavoring to teach nearly three times as many subnormals as would be placed in a special class, and mixed in with a few normal children as well).

Class D (Kdg.)—Numbers 3, 17, 20.

Institution—Number 33.

Special class—Number 32.

Out of school—Numbers 12, 22, 25, 26, 19.

CONCLUSIONS.

1. The school examined is marked by unusual conditions of mental deficiency of varying degrees.

2. The Binet tests given to entrants to first grade would not result in any unjust labeling of them as mental defectives.

3. The most evident fault of the tests if used as prognosticative of school progress is over-optimism.

4. The chief value of giving the tests would be in having them productive of proper distribution of entrants according to ability, into regular classes, classes for the slow but intelligent, special classes for subnormal, expulsion for feeble-minded.

5. Where such considerable mental deficiency is found among first grade entrants, the school curriculum should be elastic, and should contain much industrial training, coupled with effort to reach the school children socially.

THE MEASUREMENT OF EFFICIENCY IN SPELLING, AND THE OVERLAPPING OF GRADES IN COMBINED MEASUREMENTS OF READING, WRITING AND SPELLING.

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Methods of Testing. On first thought it would seem to be an easy matter to test spelling capacity by simply finding out how many words of a given list a person can spell correctly. The difficult problem, however, is the selection of a list of test words which shall test fairly and adequately any person's spelling ability, and which shall be equivalent in value, or, at least, shall have a known value. A number of extensive investigations of spelling have been made, but all of them, with the exception of the studies made by Ayres[1] and Buckingham,[2] have been made with arbitrarily selected words. To be sure, they were selected on good judgment for the purposes for which they were to be used, but, nevertheless, they were arbitrary and of unkonwn value as means of determining spelling capacity or attainment.

Rice,[3] in his pioneer study, used a sentence test containing seventy-five test words, a column test composed of fifty words, and a composition test in which the pupils wrote compositions on topics connected with their school studies. Cornman[4] later used Rice's column and composition tests, and also a test in which the pupils wrote as many words as they could in fifteen

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[1] LEONARD P. AYRES. *The Public Schools of Springfield, Illinois.* Russell Sage Foundation, New York.
[2] B. R. BUCKINGHAM. *Spelling Ability.* Columbia University.
[3] J. M. RICE. *The Futility of the Spelling Grind.* The Forum, 1897.
[4] O. P. CORNMAN. *Spelling in the Elementary School.* 1902. Boston.

minutes. They were allowed to write any words that came to their minds. Wallin,[5] in his investigation of spelling in Cleveland, employed a dictated composition test containing specified test words and a column test composed of a different set of forty or more words for each grade.

The chief criticisms of these methods are (1) that it is impossible to make valid comparisons of grade with grade or school with school when a different list is used for each grade whose relative difficulty is entirely unknown. It is, therefore, futile to say that one school or grade spells as well as, or better than, or worse than another. Yet such comparisons are made frequently in the studies referred to. (2) The composition test is of little value because the pupil is free to select his own words. He is quite sure to avoid the use of words concerning whose spelling he is uncertain. The same criticism applies to Cornman's fifteen-minute test. (3) The dictated-sentence test has the same fault as the column test. The words are more or less arbitrary and, when a different set of test words is used for each grade, comparisons are impossible.

More recently the lists compiled by Ayres and by Buckingham represent real attempts to select test words on a scientific basis. Ayres' list is composed of a set of ten words for each grade from the second to the eighth. Each set of ten was so selected, on the basis of previous tests, that seven out of ten children of a grade on an average can spell correctly all the words designed for that grade. The lists are as follows:

2d grade.	3d grade.	4th grade.	5th grade.	6th grade.	7th grade.	8th grade.
foot	fill	forty	several	decide	district	petrified
get	point	rate	leaving	general	consideration	tariff
for	state	children	publish	manner	athletic	emergency
horse	ready	prison	o'clock	too	distinguish	corporation
cut	almost	title	running	automobile	evidence	convenience
well	high	getting	known	victim	conference	receipt
name	event	need	secure	hospital	amendment	cordially
room	done	throw	wait	neither	liquor	discussion
left	pass	feel	manner	toward	experience	appreciate
with	Tuesday	speak	flight	business	receive	decision

[5] J. E. W. WALLIN. *Spelling Efficiency.* Warwick & York, Baltimore.

These words have the advantage of being made up of words of known difficulty. There are, however, three points that should be considered. (1) The lists are so small that the chance of familiarity or unfamiliarity on the part of individual pupils with these particular words is rather large. The result is that, while the words no doubt have validity for testing a grade or class as a whole, they are apt to be quite unreliable as a test of individual pupils. (2) As a result of the manner in which the words were selected, they are sure to be too easy for the better pupils of each grade, and hence they would not test the spelling ability of such pupils. By definition, seven out of ten pupils can spell correctly all the words assigned to their grade. (3) It is impossible to measure grade-to-grade progress with objective certainty, because the relative difficulty of the lists for the different grades is unknown.

Buckingham selected, on the basis of a series of tests, two lists of twenty-five words each of known difficulty. These are arranged on a scale of increasing value, as follows:

1st List.		2d List.	
only	freeze	chicken	against
even	forty	butcher	circus
smoke	wear	Tuesday	guess
front	minute	answer	telephone
another	pear	raise	choose
lesson	button	beautiful	telegram
bought	janitor	instead	saucy
pretty	sword	tailor	already
nails	whistle	tying	pigeons
sure	stopping	towel	beginning
nor	carriage	tobacco	grease
cousin	saucer	whole	too
touch		quarrel	

The relative values of these words have been determined quite accurately. A child's spelling capacity would be measured by determining the number of words he can spell correctly and then assigning to him a score on the basis of the values of the words spelled. Criticisms (1) and (2) made in connection with the Ayres list apply here also. The force of the second criticism is shown by the distribution curves of spelling ability as published by Buckingham. The words are too easy for the better pupils even as far down as the fourth

grade. In the upper grades more and more of the pupils can spell correctly all the words in the list until in the eighth grade more than half of the pupils can spell all of the words correctly. A third point, perhaps a minor one, is that the scoring, if it is to be done accurately, is rather difficult.

The method for testing efficiency in spelling which is proposed here, and which has been used in this investigation, will be described first. The various critical points concerning its validity and accuracy will be considered later.[6] The words were selected in the following manner: The first defined word on every even-numberd page in Webster's New International Dictionary (1910 edition) was chosen, making a total of 1186 words. From these all technical, scientific and obsolete words were discarded, which left 612 words. Finally, 12 other words which approached most closely to being technical or obsolete were discarded, so as to leave 600 words. These were then arranged alphabetically in the order of size, beginning with 3-letter words, 4-letter words, etc., down to the longest words. This list was then divided into six lists of 100 words each by chosing for the first list, the 1st, 7th, 13th, etc.; for the second list, the 2d, 8th, 14th, etc.; for the third list, the 3d, 9th, 15th, etc.; for the fourth list, the 4th, 10th, 16th, etc.; for the fifth list, the 5th, 11th, 17th, etc., and for the sixth list, the 6th, 12th, 18th, etc. The lists resulting from this process are as follows:

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[6]This investigation was begun before the studies of Ayres and Buckingham were published. Consequently their methods were not taken into account.

FIRST LIST.

1. add
2. but
3. get
4. low
5. rat
6. sun
7. alum
8. blow
9. cart
10. cone
11. easy
12. fell
13. foul
14. gold
15. head
16. kiss
17. long
18. mock
19. neck
20. rest
21. spur
22. then
23. vile
24. afoot
25. black
26. brush
27. close
28. dodge
29. faint
30. force
31. grape
32. honor
33. mince
34. paint
35. prism
36. rogue
37. shape
38. steal
39. swain
40. title
41. wheat
42. accrue
43. bottom
44. chapel
45. dragon
46. filter
47. hearse
48. laden
49. milden
50. pilfer
51. rabbit
52. school
53. shroud
54. starch
55. vanity
56. bizarre
57. compose
58. dismiss
59. faction
60. hemlock
61. leopard
62. omnibus
63. procure
64. rinsing
65. splashy
66. torpedo
67. worship
68. bescreen
69. commence
70. estimate
71 flourish
72. luckless
73. national
74. pinnacle
75. reducent
76. standing
77. venturer
78. ascension
79. dishallow
80. imposture
81. invective
82. rebellion
83. scrimping
84. unalloyed
85. volunteer
86. cardinally
87. connective
88. effrontery
89. indistinct
90. nunciature
91. sphericity
92. attenuation
93. fulminating
94. lamentation
95. secretarial
96. apparitional
97. intermissive
98. subjectively
99. inspirational
100. ineffectuality

SECOND LIST.

1. air
2. cat
3. hop
4. man
5. row
6. tap
7. awry
8. blue
9. cast
10. corn
11. envy
12. feud
13. game
14. grow
15. home
16. knee
17. look
18. mold
19. part
20. ruin
21. take
22. tree
23. well
24. allay
25. blaze
26. buggy
27. clown
28. doubt
29. false
30. forth
31. grass
32. house
33. money
34. paper
35. quill
36. rough
37. shout
38. stick
39. swear
40. trump
41. whirl
42. action
43. bridle
44. charge
45. driver
46. finger
47. heaven
48. legend
49. motley
50. portal
51. recipe
52. scrape
53. simple
54. strain
55. weaken
56. breaker
57. congeal
58. disturb
59. foreign
60. hoggery
61. meaning
62. onerate
63. provoke
64. salient
65. station
66. trample
67. abstract
68. bulletin
69. covenant
70. eugenics
71. friskful
72. luminous
73. opulence
74. planchet
75. reformer
76. thorough
77. watering
78. belonging
79. displayed
80. indention
81. mercenary
82. redevelop
83. sensecent
84. uncharged
85. whichever
86. centennial
87. constitute
88. exaltation
89. invocative
90. personable
91. strawberry
92. concentrate
93. imaginative
94. mathematics
95. selfishness
96. collectivity
97. marriageable
98. agriculturist
99. quarantinable
100. relinquishment

THIRD LIST.

1. art
2. dry
3. ice
4. mix
5. run
6. top
7. back
8. bond
9. chip
10. crib
11. ever
12. fire
13. gilt
14. hack
15. hunt
16. lace
17. main
18. more
19. pelt
20. sand
21. tang
22. turn
23. wine
24. amuse
25. blind
26. catch
27. count
28. dress
29. fancy
30. freak
31. gross
32. inlet
33. muddy
34. peace
35. razor
36. saint
37. smell
38. stock
39. swoop
40. twine
41. white
42. barrel
43. buckle
44. cotton
45. engine
46. flimsy
47. helmet
48. lesser
49. ocular
50. potato
51. relate
52. season
53. single
54. supply
55. weight
56. captain
57. contour
58. earnest
59. fowling
60. inflate
61. measure
62. palaver
63. raising
64. seizing
65. sulphur
66. trestle
67. adhesive
68. buttress
69. dominate
70. exchange
71. governor
72. manifest
73. osculate
74. pleasure
75. revising
76. traverse
77. westward
78. capitally
79. extremism
80. indicated
81. monoplane
82. repertory
83. stimulate
84. unlocated
85. accidental
86. citizenize
87. contribute
88. expertness
89. locomotive
90. prevailing
91. symmetrize
92. consolatory
93. incremental
94. penetrative
95. superintend
96. conterminous
97. naturalistic
98. artificiality
99. re-examination
100. sentimentalism

FOURTH LIST.

1. bee
2. elk
3. key
4. new
5. saw
6. war
7. base
8. book
9. clue
10. down
11. fall
12. flat
13. girt
14. hand
15. iron
16. lime
17. make
18. move
19. plug
20. shop
21. tear
22. tusk
23. wire
24. apple
25. blood
26. chain
27. craft
28. drawn
29. field
30. frost
31. guard
32. jelly
33. ocean
34. pitch
35. remit
36. scale
37. speak
38. stone
39. thick
40. under
41. widen
42. bearer
43. canine
44. create
45. eraser
46. garret
47. hollow
48. little
49. office
50. prince
51. retain
52. settle
53. sluice
54. swerve
55. withal
56. chicken
57. counter
58. emperor
59. freight
60. journal
61. neglect
62. passion
63. reserve
64. serpent
65. surface
66. trouble
67. affected
68. calendar
69. enabling
70. external
71. greeting
72. mosquito
73. outfling
74. positive
75. romantic
76. undulate
77. adverbial
78. carpentry
79. franchise
80. infatuate
81. promenade
82. rigmarole
83. strippling
84. vegetable
85. assignment
86. comparison
87. coordinate
88. expressage
89. mayonnaise
90. recompense
91. untraveled
92. consumptive
93. infuriation
94. photosphere
95. terrestrial
96. horsemanship
97. regenerative
98. circumscribed
99. sculpturesque
100. verisimilitude

FIFTH LIST.

1. bow
2. fly
3. law
4. old
5. see
6. ache
7. bead
8. call
9. cold
10. draw
11. fast
12. foil
13. glue
14. hard
15. jack
16. line
17. mark
18. musk
19. prig
20. slat
21. test
22. vend
23. wood
24. armor
25. boast
26. chase
27. cross
28. enjoy
29. fixed
30. glean
31. guild
32. joint
33. order
34. point
35. revel
36. scorn
37. spire
38. strut
39. three
40. voice
41. wince
42. beaver
43. cannon
44. crispy
45. escape
46. gladly
47. hustle
48. mallet
49. oriole
50. pulley
51. rubric
52. shears
53. solace
54. trifle
55. yellow
56. circuit
57. crooked
58. enstamp
59. general
60. lateral
61. nourish
62. placard
63. resolve
64. signify
65. tabloid
66. unitive
67. approved
68. cerebral
69. entirely
70. farewell
71. incident
72. mountain
73. parallel
74. prelimit
75. spectral
76. urbanize
77. aggrieved
78. clarifier
79. hydraulic
80. inheritor
81. purgation
82. sacrifice
83. surviving
84. vestibule
85. authorship
86. concoction
87. derigation
88. federative
89. memorandum
90. regularity
91. abnormality
92. disseminate
93. insensitive
94. predominate
95. unprevented
96. inarticulate
97. stupendously
98. communicating
99. anthropometric
100. emancipationist

SIXTH LIST.

1. box
2. gap
3. lay
4. pod
5. sex
6. alms
7. bird
8. camp
9. comb
10. dusk
11. fear
12. foot
13. goat
14. hawk
15. keep
16. life
17. mass
18. navy
19. raft
20. some
21. that
22. vice
23. work
24. aside
25. brawn
26. chime
27. crown
28. equip
29. flock
30. grand
31. hedge
32. knock
33. ought
34. poppy
35. river
36. shaft
37. stall
38. sugar
39. throw
40. watch
41. young
42. begird
43. causal
44. discus
45. ferret
46. gutter
47. killed
48. middle
49. paddle
50. puzzle
51. sample
52. shield
53. spring
54. tubule
55. bicycle
56. commode
57. discard
58. excuser
59. gravity
60. leaping
61. obloquy
62. pontiff
63. retreat
64. society
65. tigress
66. vitiate
67. auditory
68. churlish
69. erosible
70. fetching
71. juncture
72. narcotic
73. parasite
74. probator
75. squeaker
76. vagabond
77. amphibian
78. clearness
79. impatient
80. intestine
81. quadruple
82. sauciness
83. ticketing
84. virulence
85. bafflement
86. condescend
87. disconcert
88. illiterate
89. metropolis
90. repression
91. animalcular
92. divestiture
93. intrinsical
94. prerogative
95. upholsterer
96. interference
97. subantarctic
98. convocational
99. imperturbation
100. irresponsibility

The reasons for selecting the words on this particular basis were: (1) It would give a random sampling of the entire non-technical English vocabulary. Familiar or unfamiliar words, large or small words, hard or difficult words would all be included in the test lists in the same proportions in which they occur in the entire vocabulary. (2) This selection would give a list including a fair sampling of very easy and very difficult words, so that it could be used for testing the spelling capacity of the beginner as well as that of the expert speller. (3) It would yield a list sufficiently large for testing adequately any child's spelling ability. (4) It would give a list that could be duplicated in the same manner by anyone else, if, for some reason, it should be desired to have a different but comparable list. Similar lists of 100 words each could be constructed, for example, by selecting the 2d, 3d, or any other defined word on the even or odd-number pages of Webster's New International Dictionary and then discarding words in the manner described above so as to leave 600 words.

Several points concerning the validity of these tests must be discussed. First, it is urged by teachers that the lists do not contain a sufficient number of words familiar to the younger pupils to test fairly their spelling ability. To this we may reply that we are not trying to find out how many words any child can spell, but we are trying to test his spelling ability. We might likewise say that there are not sufficient familiar words for the older pupils either, because any pupil can spell a great many other words not found in these lists. The test is just, if only a fair sampling of words of the different types are present, so that the spelling ability of every pupil shall be measured accurately in relation to the spelling ability of every other pupil. There is good experimental evidence for believing that the tests do this.

Second, in testing any child or grade, how many lists need to be used, and how accurate is the resulting score? The experiments show that the spelling ability of any individual pupil can be ascertained quite accurately by the use of any two lists, preferably at two different times. Specifically, the problem would be this: If a pupil is tested with one list at one time and, let us say, the next day with a second list, how closely will

the two scores agree? On the basis of tests made with 519 pupils, the mean variation between the scores from any two of the six lists is 2.2 points. That is, the average deviation of the scores from two lists used on an individual pupil is 2.2 points. To illustrate the close agreement of the scores made by the same pupils on lists 1 and 5, for example, the following records are given:

RECORDS OF THE PUPILS IN THE FOURTH GRADE MADE WITH TWO LISTS.

List 1. Per cent.	List 5. Per cent.	Final score. Per cent.
65	61	63
57	53	55
73	74	73.5
52	52	52
46	47	46.5
59	58	58.5
64	63	63.5
62	61	62
47	50	48.5
54	49	51.5
57	56	56.5
51	44	47.5
63	56	59.5
51	46	48.5
Etc.		

Thus the first pupil spelled 65 per cent. of the words in list 1 correctly and 61 per cent. of the words in list 5 correctly, etc. The agreement is obviously close, and the average of the scores made by pupils in two lists will represent quite accurately his spelling ability.

To ascertain in a different way the reliability of the tests, a comparison was made between the efficiency in spelling as measured for each pupil by two lists and the marks assigned by the teachers to the pupils for the year's work in spelling. Coefficients of correlation were computed between the marks and the test scores for grades 3 to 8 in a school of 256 pupils. The following are the coefficients:[7]

Third grade	.80
Fourth grade	.69
Fifth grade	.73
Sixth Grade	.46
Seventh grade	.59
Eighth grade	.84
Average	.69

[7]These calculations were made by Mr. W. F. Roecker.

These coefficients are uniformly high, with the exception of the one for the sixth grade. The lower coefficient there is due to the inaccurate marking of the teacher, which is indicated by the fact that practically all her pupils were marked either "Good" or "Excellent." These high coefficients indicate a close agreement between the scores in the tests and the teachers' estimates of the pupils' attainments. There is every reason for believing that the tests give a far more accurate evaluation of a pupil's achievement in spelling than the teacher's mark, even at the end of a whole year of instruction and observation. Concrete evidence for this will be presented later.

Third, what is the relative difficulty of the six lists? Is a score made on one list comparable with that made on any other list? To answer this question all grades were tested on one day with list 1 and on the second day with one of the other five lists. In this manner a direct comparison could be made of lists 2 to 6 with list 1. These results showed that the lists are practically identical in difficulty, list 6 being slightly more difficult and list 5 slightly easier. The actual data are as follows:

List 2 is .9 point easier than list 1.
List 3 is .9 point easier than list 1.
List 4 is 2.6 points easier than list 1.
List 5 is .9 point harder than list 1.
List 6 is 3.4 points harder than list 1.

For practical purposes the differences among the six lists, with the possible exception of lists 5 and 6, are so small that they are negligible. But if it is desired in any particular instance, the score of a given pupil or grade may be raised or lowered according to the above table of differences.

The fourth point relates to the relative difficulty of the words in each list. As they stand, the words are simply arranged according to size, which, of course, does not necessarily place them in the order of difficulty, except in a general way. The question of the relative difficulty of the words in each list separately is not very important so long as the lists as a whole are equal; that is, so long as each list contains approximately the same number of words of every degree of difficulty. This

is apparently the case, as shown above by the data given under the third point. For test purposes, the constitution of the various lists is practically identical.

Directions for Administering and Scoring the Tests. The tests are given in the following manner:

> First have the pupils write the name, grade, school, city and date at the top of the sheet.
>
> Pronounce the words clearly, but do not sound them phonetically, or inflect them so as to aid the pupils. Give the meaning of words that sound like words with a different meaning and spelling. The pupils are to write the words and to number them in the order in which they are given. Allow sufficient time for the writing.
>
> Each grade is to be tested twice on two successive days. Use any one of the six lists on the first day and a different list on the second day. (When an entire school is being tested it may be desirable, though not necessary, to use on the first day the same list, say list 1, in all grades and any other list on the second day.)
>
> In the first grade use the first 40 words of the list, in the second grade use the first 65 words, in the third grade use the first 80 words, in the fourth grade use the first 90 words, and in all other grades use the entire list.

The tests are scored by checking off all words spelled incorrectly and then counting the number of words spelled correctly. This number is the score and also the percentage of words correct, since the lists contain 100 words each. An average is taken of the scores made in the two tests, which is the final score for each pupil. Omitted words are counted as incorrect. Words that may be spelled in different ways are counted correct if they are spelled according to any one of the permissible ways.

Standards of Efficiency in Spelling. The spelling tests have been made thus far, according to the specifications stated above, on 2500 pupils in twelve schools of five cities located in Wisconsin, Minnesota and New York. From these tests tentative standard scores have been derived, which are shown in the following tables and curves. The standard scores are smoothed values derived from the actual averages. The differences between the two are very slight. These standard scores are probably not quite as reliable as those for reading and writing (see January and February numbers of this JOURNAL), because they are based on a smaller number of tests. This condition, however, is partly offset by the fact that the differences among the schools tested are less than those for

reading and writing, and by the fact that the smoothed values differ even less from the actual averages than was the case with the reading and writing scores.

STANDARD SCORES FOR SPELLING.

Grades	1	2	3	4	5	6	7	8
	10	30	40	51	61	71	78	85

The following table gives the results for the various schools tested:

Grades	1	2	3	4	5	6	7	8
City A, School 1	12.8	36.0	41.0	52.7	61.5	70.0	80.6	86.3
School 2	11.5	30.0	43.8	50.4	66.1	74.6	79.2	82.4
School 3	7.0	29.0	42.0	49.0	63.2	78.0	75.5	79.8
City B, School 1	....	....	....	....	65.5	79.2	85.0	90.0
City C, School 1	9.8	28.4	37.3	40.6	55.7	67.1	73.2	80.1
Averages	10.3	30.8	41.0	48.2	62.4	73.8	78.7	83.7

It is obvious that the attainment in spelling of a pupil, class, or school can be determined by means of these tests and standard curves.

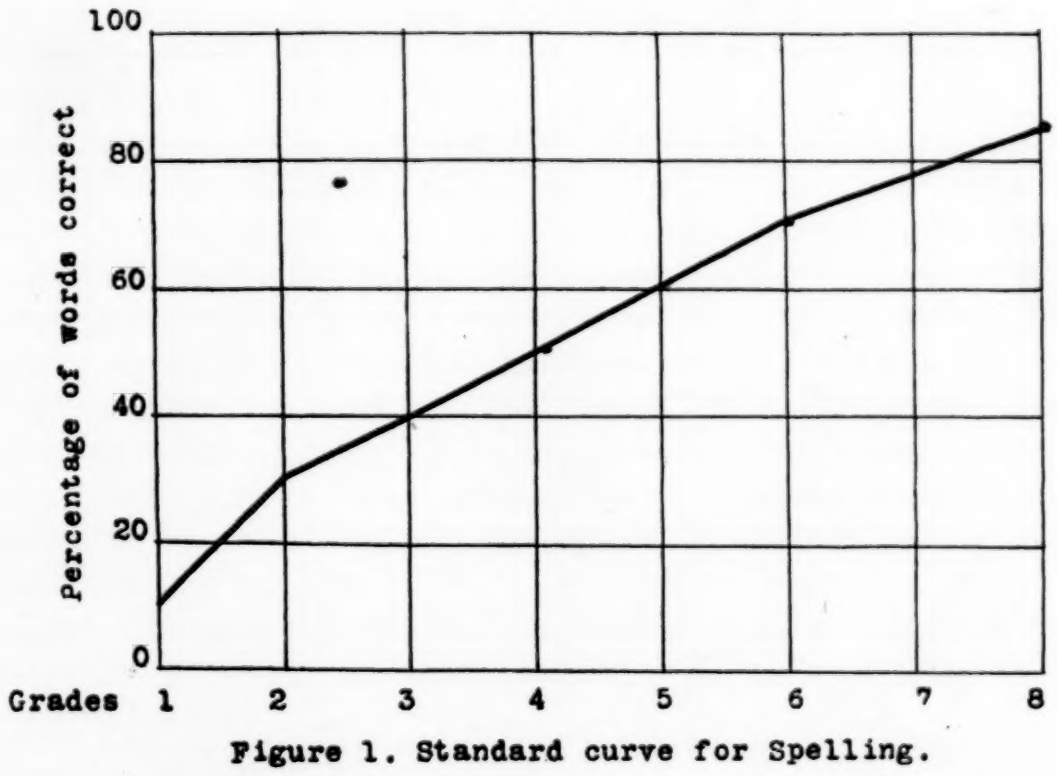

Figure 1. Standard curve for Spelling.

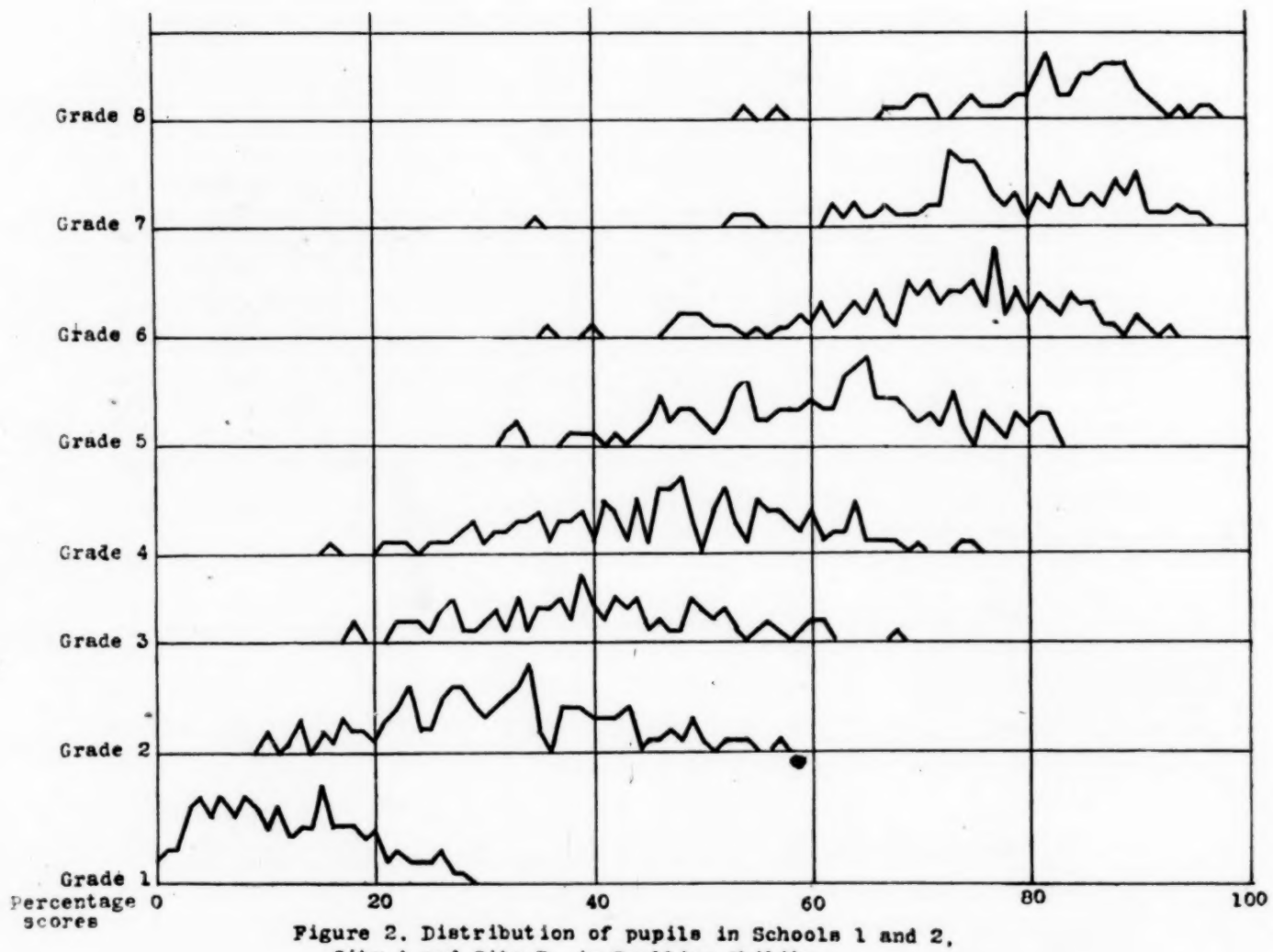

Figure 2. Distribution of pupils in Schools 1 and 2, City A and City B, in Spelling Ability.

Individual Differences and the Overlapping of Grades. The spelling tests reveal identically the same facts concerning the distribution of the pupils and the overlapping of the grades as were found in case of the reading and writing tests. The facts are presented in the curves of Figure 2. The numbers along the baseline are the percentage scores made in spelling, and the vertical distances indicate the number of pupils.

Little comment concerning the significance of these curves is necessary. The best impression of the real situation can be gotten by studying and comparing the curves themselves. To show the almost incredible amount of overlapping and the range of capacities found in the various grades, it will be seen that there are two pupils in the second grade who can spell as well as two pupils in the eighth grade. Other comparisons of a similar kind can be made on the basis of the curves. Expressing the amount of overlapping in terms of figures, we find that on the average 20.8 per cent. of the pupils in any given grade reach or exceed the median of the next grade above it, and 6.2 per cent. reach or exceed the median of the second grade above it.

The Overlapping of Grades in Reading, Writing, and Spelling Combined.[1]

We have noticed, in connection with each one of the three subjects examined, the astoundingly wide ranges of abilities manifested by pupils in the same grades. The question naturally arises, Would these differences not be very much less if each pupil's performance in all studies were measured and combined? Thus, a fourth grade pupil might write as well as the average seventh grade pupil and read as well as the average fifth grade pupil, but spell no better than the average first grade pupil. His average performance in all three studies combined would not deviate very much from the average of his grade.

Now, what are the actual facts with regard to this problem? In order to obtain information on this question, the three

[1]These tests are printed in available form as a bulletin, The Measurement of Efficiency in Reading, Writing, Spelling, and English. The College Book Store, Madison, Wis.

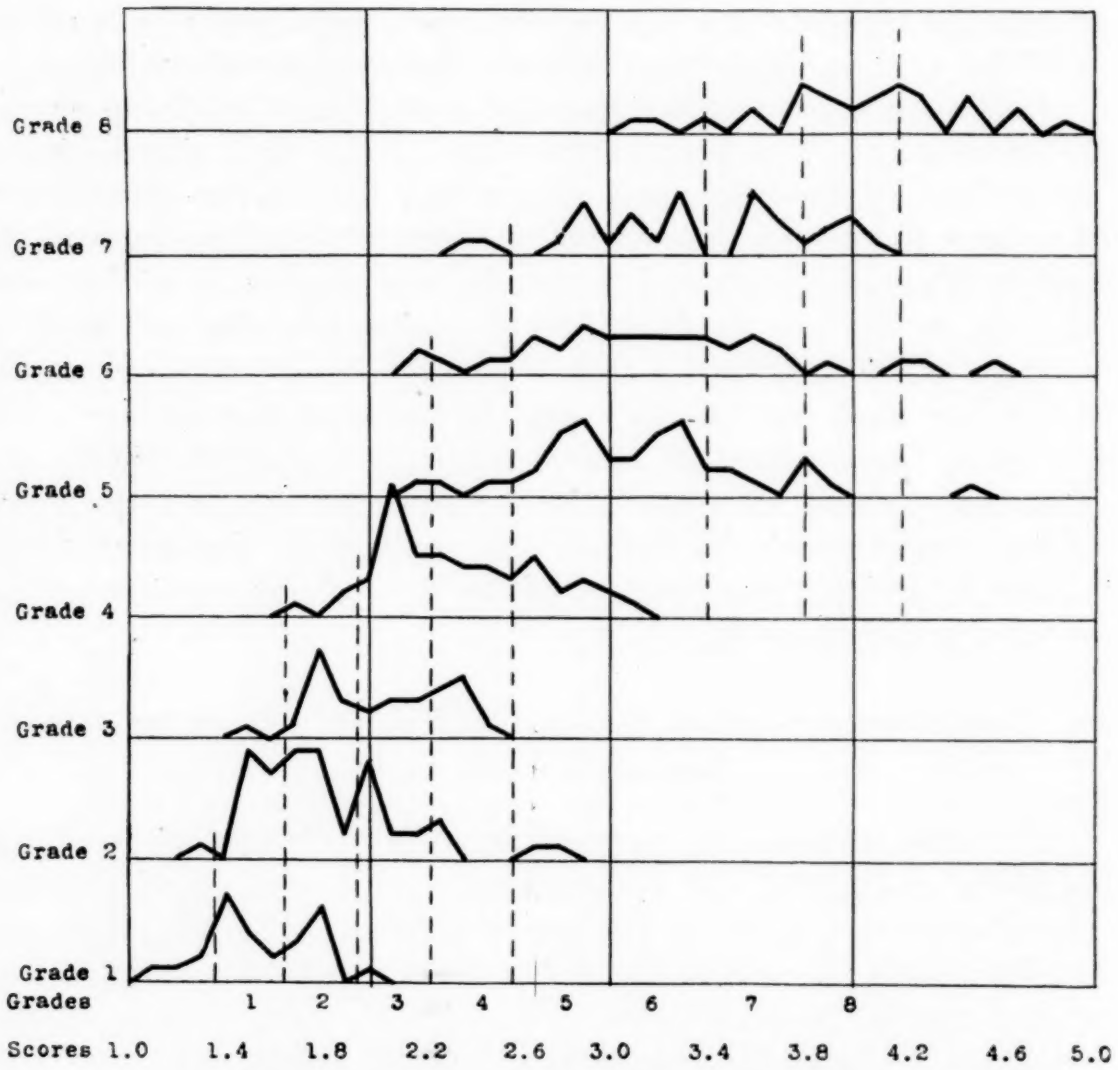

FIG. 3. Distribution of 401 pupils in Reading, Writing, and Spelling combined.

studies were taken to be of equal value, and an average score was computed for each pupil. This average score was obtained by reducing all scores for a given pupil to a common basis. For example, a fourth grade pupil made the following scores: Reading, speed, 2.6 words per second; comprehension, 13 words. Writing, speed, 84 letters per minute; quality, 9.5. Spelling, 44 words correct. The growth in speed of reading from the first to the eighth grade is from 1.5 words per second to 4.0 words per second, or a gain of 2.5. (See standard scores.) Similarly, the growth in comprehension is from 15 to 50 words, or a gain of 35 words; the growth in speed of writing is from 20 to 83 letters per minute, or a gain of 63 letters; the growth in quality is from 6.5 to 10.9, or a gain of 4.4 points; the growth in spelling is from 10 to 85, or a gain of 75.

If we may assume, as we have done here, that these increases are equal in value, then a growth of 2.5 in speed of reading = a growth of 35 in comprehension = a growth of 63 in speed of writing = a growth of 4.4 in quality of writing = a growth of 75 in spelling. Hence a gain of .1 in speed of reading = 1.4 in comprehension of reading = 2.5 in speed of writing = .22 in quality of writing = 3.0 in spelling. On this basis the final score of the pupil cited above is 2.4 in terms of the first member of the equation (speed of reading). In this manner a final score was computed for each pupil in a school of 401 pupils. These scores are plotted in the form of distribution curves for each grade, as shown in Figure 3.

A comparison of these curves reveals still an immense amount of overlapping. It is somewhat less than the overlapping of the performances in each subject separately, but it is not as much less as most teachers would anticipate. The vertical broken lines are so drawn as to indicate the range of ability that should be included in each grade. They are drawn at the points which lie half way between the standard scores of the various grades. For example, the standard score for the first grade is 1.5, and for the second 1.8. The vertical line is drawn at 1.65, and so on for the rest. Thus the space included between the first and the second vertical lines comprises the range that should be included in the first grade.

If we follow this column upward, we notice that it includes a considerable portion of the pupils in the second grade and a small portion of the pupils in the third grade. This means that these pupils in the second and third grade are only equivalent in performance to the first grade. If we make similar comparisons for the other grades, we find that the column for any one grade includes pupils in several higher and lower grades. Thus the column for the third grade includes pupils from the first up to the sixth grade, and the column for the fifth grade includes pupils from the second to the seventh grade.

If we express these overlappings in percentages, we find the following facts:

In the 1st	grade	37.0%	reach or exceed the lower limit of the 2d grade.
In the 2d	grade	31.4%	reach or exceed the lower limit of the 3d grade.
In the 3d	grade	33.3%	reach or exceed the lower limit of the 4th grade.
In the 4th	grade	27.4%	reach or exceed the lower limit of the 5th grade.
In the 5th	grade	54.5%	reach or exceed the lower limit of the 6th grade.
In the 6th	grade	30.0%	reach or exceed the lower limit of the 7th grade.
In the 7th	grade	18.8%	reach or exceed the lower limit of the 8th grade.
	Average....	33.2%	

In the 2d	grade	31.4%	fall below the upper limit of the 1st grade.
In the 3d	grade	40.0%	fall below the upper limit of the 2d grade.
In the 4th	grade	43.1%	fall below the upper limit of the 3d grade.
In the 5th	grade	9.1%	fall below the upper limit of the 4th grade.
In the 6th	grade	47.5%	fall below the upper limit of the 5th grade.
In the 7th	grade	53.1%	fall below the upper limit of the 6th grade.
In the 8th	grade	23.3%	fall below the upper limit of the 7th grade.
	Average....	35.3%	

This situation is utterly surprising. The highest one-third of the pupils in any given grade on the average are equal in efficiency to the pupils of the next grade above it, and the lowest one-third are equal in efficiency to the pupils of the next grade below it. This leaves only the middle one-third of pupils who are properly placed. In other words, if we were to place pupils according to their actual performance in school studies, one out of every three pupils should be in the next higher grade, one in the next lower grade, and one should remain where he is.

THE
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EDITORIAL.

SOCIETY AND FEEBLE-MINDEDNESS.

Is the relative amount of feeble-mindedness increasing? Many seem to think that it is. A striking characteristic of feeble-mindedness is the lack of those higher mental processes which make for intellectual and moral control. This lack of control, coupled with strong sex impulses, results in a higher rate of reproduction than is found with normal individuals, and, in spite of a high infant mortality, brings about a more rapid increase. Studies of school children indicate that as many as 2 per cent. of the school population must be classed as feeble-minded. Surveys of houses of detention, jails, reformatories and prisons substantiate the claim that feeble-mindedness is an important factor in the commission of criminal acts. The evidences of degeneration and defect accumulating on all sides have occasioned serious alarm in the minds of many reflective people lest the race become infected with this blight and gradually deteriorate in intellectual efficiency. It is chiefly this alarm that has led to the enactment of laws for the segregation or sterilization of the feeble-minded, and that has given weight to the eugenics propaganda.

It is interesting, therefore, to find a radically different view expressed in Dr. Goddard's recent book on *Feeble-mindedness.* Evidence is marshalled to show that feeble-mindedness is a unit character—a recessive trait, which appears with a fair degree of regularity in accordance with Mendel's principles of heredity. From this point of view feeble-mindedness is due to the absence of the determiner or group of determiners that give rise to "normal intelligence." It is probable that "normal intelligence" itself is an extremely variable and complex affair, involving all sorts of special aptitudes and abilities, each of which must be accounted for on the basis of heredity. This, however, does not militate against the essential point of the argument, which is that intelligence of any sort is due to a more or less complex group of determiners in the germ plasm, and that the condition known as feeble-mindedness is caused by the lack of these determiners.

Whether the view is well founded only further investigation can show; but if it be established, its significance for the attitude of society toward feeble-mindedness is worthy of consideration. If all the feeble-minded of the present day were eliminated or rendered powerless to reproduce, it would not free us from the problem, for the hybrid character of many apparently normal individuals would be revealed by the number of feeble-minded in the next generation. But even under present conditions it is probable that the number of feeble-minded is diminishing rather than increasing. The apparent increase is largely due to improved methods of finding and reporting cases. Doubtless there was a time in the history of the race when the highest human intelligence did not rise above that of the present moron. Feeble-mindedness is thus a vestigial phenomenon which is being gradually eliminated on account of the superiority of the dominant characteristic (intelligence) in securing adjustment to the environment. Undoubtedly the carrying out of the eugenics program would hasten the elimination, but our greatest present need is to recognize the essential nature of the feeble-minded, to give up the hope of trying to make him intelligent, to cease holding him responsible as intelligent, and to treat him as the arrested child that he really is. With such judicious treatment the high-grade feeble-minded might still become a useful, though inferior, member of society.

J. C. B.

NOTES AND NEWS.

Through the generosity of a resident of California, and in connection with the Panama-Pacific International Exposition, the National Education Association is able to offer a prize of one thousand dollars for the best essay on "The Essential Place of Religion in Education, with An Outline of a Plan for Introducing Religious Teaching Into the Public Schools." Religion is to be defined in a way not to run counter to the creeds of Protestant, Roman Catholic or Jew. Notice of intention to file an essay must be given the secretary of the Association by April 1, 1915. Essays will be limited to ten thousand words, and must be in the possession of the secretary by June 1, 1915.

A special committee of the New York City Board of Education has reported in favor of granting leaves of absence for two years to school teachers who are about to become mothers. Mrs. Bridget C. Peixotto, who was dismissed on the charge of neglect of duty on account of absence due to motherhood, and who appealed her case to the New York State Commissioner of Education, has been reinstated by the decision of the Commissioner, and has been allowed full pay for the time of her suspension. Sixteen other teacher-mothers who have been suspended on like charges will be more or less affected by this decision. This is a step in the removal of the obsession that dominates American school boards, that they must deprive the schools of valuable and experienced teachers because these women are fulfilling an obligation they have to themselves and to society.

The work in the training of teachers in the University of Washington has been reorganized and the School of Education changed into a College of Education. Prof. Frederick E. Bolton continues as dean of the new organization. Freshmen may now enter the College of Education instead of being required, as formerly, to complete two years of work in the College of Liberal Arts or the College of Science. The entrance requirements will be the same as for entrance to the College of Liberal Arts.

To secure the bachelor's degree the student must meet the following requirements: Zoology, 8 credits (semester hours); psychology,

4 credits; sociology, 6 credits; physical training, 8 credits; English, 0-8 credits; teaching subjects, 64 credits; total, 132 credits. The teaching subjects will include two academic majors, or one academic major and two or three academic minors. The major will consist of from 24 to 32 credits. The minor consists of from 12 to 16 credits. The teaching subjects will be elected by the student under the advice of the dean of the College of Education and the head of the department in which the academic major is chosen. The number of credits required in English is variable, depending upon the preparation of the student at entrance. The freshmen students are classified in English on the basis of their high school record and the progress which they make in the first semester.

It will be noticed that under this new plan the curriculum is much more flexible than usual. No specific requirements are made in foreign language, physical sciences, mathematics or history. It is not the intention to discriminate against these subjects. The student may freely elect if he chooses. It is assumed, however, that the student should have the important educational privilege of choosing largely his own courses. This is in harmony with the idea of the greater vocationalizing of education.

The foundation work in zoology and psychology will be given as far as possible with the teaching profession in mind. The department of zoology is planning to reorganize the first year's work in zoology so as to include some of the larger phases of the discussion of evolution, as well as the details of a usual beginning laboratory course in zoology. The subjects of zoology, psychology, sociology and education were selected with the idea of affording subjects which will give a knowledge of the child, a knowledge of society, a knowledge of the problems of education determined by the child and society, and a larger outlook upon the profession. Through the arrangement of academic majors and minors and by the greater freedom from specific requirements, it is believed that the student will have a better opportunity to select a wide range of subjects which he will teach and at the same time study intensively some one subject or group of subjects.

The attendance in the department of education has more than doubled during the last two years. At present there are about 400 different students, among them over 40 graduate students. Two additional instructors have been employed during the past two years.

making a total in the staff of five on full time, one on half time and one lecturer who gives one course each semester.

At the recent meeting of the American Psychological Association, held at Philadelphia, Pa., December 29-31, 1914, Prof. John B. Watson of the Johns Hopkins University was elected president for the ensuing year. As members of the Council for a period of three years, succeeding Professors Max Meyer and Margaret F. Washburn, Professors R. P. Angier of Yale University and W. D. Scott of Northwestern University were chosen.

The time and place for the twenty-fourth annual meeting was left to the decision of the Council. This decision has been reached, and the meeting will be held at the University of Chicago, December 28-30, 1915.

A special meeting for the reading of papers was also authorized to be held at San Francisco during the Panama-Pacific Exposition. This meeting will be in affiliation with the American Association for the Advancement of Science, within the week August 2-7, 1915. The organization and arrangements were placed in the hands of a committee consisting of Professor G. M. Stratton, University of California, chairman, and Professors Lillien J. Martin and Warner Brown.

The trustees of the North Carolina School for Feeble-Minded, at the annual meeting held in Kingston, recommended an extension of the institution including three buildings and involving an expenditure of $120,000. Dr. C. B. McNairy was re-elected superintendent of the school.—*School and Society.*

Dr. A. Monroe Stowe, formerly professor of education in De Pauw University, has been elected president of Toledo University, the municipal university of Toledo, Ohio.

Mr. Thomas W. Churchill, president of the Board of Education of New York City, was recently re-elected to that position by a substantial majority. President Churchill has shown himself responsive to the demands of the community in educational matters and zealous to obtain the best possible educational opportunities for the children of New York City.

PUBLICATIONS RECEIVED.

(Notice in this section does not preclude a more extended review.)

BENJAMIN R. ANDREWS. *Education for the Home.* Bulletin No. 610. Washington: Bureau of Education, 1914. Pp. 53.

Contains an introductory survey of home economics in its relation to education, discusses the methods of teaching household arts, and outlines the equipment needed for teaching household arts in elementary, high, and normal schools. A final section deals with home economics in colleges.

ISAAC EMERY ASH. *Fatigue and Its Effects Upon Control.* Archives of Psychology, No. 31, June, 1914. Pp. 61. 60 cents.

Part one of this discussion deals with physical fatigue, presenting the locus of muscular fatigue, the conditions of fatigue, and original experiments in muscular fatigue produced by the use of the ergograph. Part two deals with mental fatigue, analyzing the problem, and detailing experiments on fatigue resulting from perception. The material used consisted of reading matter and four pages of reversible figures. There is an interesting section on the effects of practice in reversible perspective.

WILLIAM CHANDLER BAGBY. *Principles Justifying Common Elements in the High School Program.* Reprinted from School and Home Education, December, 1914. Pp. 12.

A masterly discussion of uniformity in the school curriculum on the ground that a high level of collective thinking depends upon a high level of common ideas. The author believes that the very essence of democracy is conditioned by the store of common ideas which determine the expressions of the electorate upon questions of public policy. Instead of the accidental and imitative uniformity of the past, we should strive for an intelligent and purposeful uniformity based upon those ideas and subjects which should be the common heritage of all.

WILLIAM CHANDLER BAGLEY. *School Discipline.* New York: The Macmillan Company, 1914. Pp. xiv, 259. $1.25 net.

This book is intended for young teachers, and lays emphasis on positive and non-coercive rather than on restrictive or repressive methods of treatment. A picture of the well-disciplined school is followed by a like portrayal of the unruly school, in which both its general and specific causes are pointed out. The task of the disciplinarian—that of transforming the unruly school into the well-disciplined one—occupies the larger part of the work. There is a discussion of corporal punishment and the reasons for the reaction against it, an outline of temporary school penalties, an analysis of troublesome types, and a final chapter on discipline and the doctrine of interest. The book is written with the author's customary lucid style, and will make a strong appeal to those who are confronted by the actual problems of the classroom.

W. V. BINGHAM. *Five Years of Progress in Comparative Musical Science.* Reprinted from the Psychological Bulletin, Vol. XI, No. 11, November 15, 1914. Pp. 421-433.

A brief discussion of seventy-nine publications.

LOUISE DEKOVEN BOWEN. *Safeguards for City Youth at Work and at Play.* New York: The Macmillan Company, 1914. Pp. xv, 241. $1.50 net.

"The following pages give a graphic description of the sordid and careless conditions under which thousands of young people habitually live, and of the valiant efforts of a small group of citizens to enlist popular agencies, state, county and city, to provide at least a minimum of protection. Although the observations and experiences here recorded are confined to Chicago, the book is perhaps chiefly valuable because of the unforgettable impression it makes upon the mind of the reader that the huge commercial cities of our day exhibit so little concern for the morale of the next generation." This passage from the preface by Jane Addams indicates the nature of the work. There are chapters dealing with civic protection in recreation, with legal protection in various walks of life, and with the need of further protection. It will undoubtedly become the basis for further discussion on the subject of means for the development of the race.

GARLAND A. BRICKER. *Agricultural Education for Teachers.* Cincinnati: American Book Co., 1914. Pp. 172.

This is a very simple introductory outline of the teaching of agriculture. It is written in response to the demand for a brief statement of the needs of the agricultural teacher, and of the points to be emphasized in preparation for this work. The widespread teaching of agriculture is such a recent movement in this country that communities in which agricultural high schools have been established find great difficulty in securing well-equipped teachers. While the perusal of this book will not in itself produce the well-equipped teacher, it will suggest to the thoughtful and open-minded teacher lines of further reading, which will be of decided help in teaching high school agriculture. There are chapters on qualifications of teachers of agriculture, the preparation of teachers, nature study, elementary agriculture, pedagogical problems, administration and teaching, the demonstration field, home projects, and agricultural clubs. A valuable feature is the abundance of references to periodical and other literature.

SHIRLEY JACKSON CASE. *The Evolution of Early Christianity. A Genetic Study of First Century Christianity in Its Relation to Its Religious Environment.* Chicago: The University of Chicago Press, 1914. Pp. ix, 385. $2.25.

The author insists that the student of Christian origins must first orient himself in the life of the times if he would understand

the genesis of the new religion and the literature it produced, and the purpose of the present book is to furnish an outline for such orientation. The chapters include a discussion of the importance of environment for Christian origins, the early connections between Christians and Jews and the subsequent breach between them, the early Christian contact with the Gentiles' religion, the religious significance of emperor worship and of philosophical speculation, the Hellenistic religions of redemption, and the final triumph of Christianity. The book is a scholarly and open-minded discussion of an extremely interesting and important epoch in the history of the world's thought and belief.

The Psychological Researches of James McKeen Cattell. Archives of Psychology, No. 30, April, 1914. Pp. 101. $1.00.

This monograph presents a review of Professor Cattell's studies on reaction time by V. A. C. Henmon; his studies of reading and perception by Walter F. Dearborn; his relation to the association method by F. Lyman Wells; his psycho-physical contributions by R. S. Woodworth; his studies by the method of relative position by H. L. Hollingworth, and his relation to the study of individual conditions by E. L. Thorndike. The monograph is a worthy monument to twenty-five years of untiring activity in the development of psychology in America.

Ida Coe and Alice J. Christie. *Story Hour Readers' Manual. The Story Method.* Cincinnati: American Book Co., 1914. Pp. 320.

A series of graded lessons in story telling, games, and phonetics. The material is arranged in eighty steps. An appendix contains an elaborately illustrated guide to enunciation.

Ellwood P. Cubberley. *State and County Educational Reorganization. The Revised Constitution and School Code of State of Osceola.* New York: The Macmillan Company, 1914. Pp. xx, 258. $1.25 net.

In this volume the author states in concrete form certain fundamental principles relating to the administration of public education in the United States. The author promises for the immediate future a more formal discussion of principles of state and county school administration, in collaboration with Prof. Edward C. Elliott of the University of Wisconsin. Osceola is a hypothetical state somewhere in the upper Mississippi Valley, containing a few large manufacturing and commercial cities, a number of smaller cities, and large and important rural and agricultural interests. It is assumed that the state has become clearly conscious of the need and purpose of public education, and that it has made education an important state interest in its constitution, organized a strong state department of education, and replaced the district system of rural education by a county unit system. The constitution and code are drawn to secure

the elimination of party politics from the selection of expert educational officers, the concentration of authority with these experts, emphasis on the schools as community centers, provision for industrial and agricultural education, a definite scheme for the apportionment of funds, large local freedom, an adequate system for the supervision of teachers and supervisory officers, and a follow-up system which will tend to keep teachers professionally alive. The book is designed to stimulate discussion, and to act in some sense as a model for the educational provisions of a State constitution.

ELNORA WHITMAN CURTIS. *The Dramatic Instinct in Education.* Boston: Houghton-Mifflin Company, 1914. Pp. xvii, 246. $1.00 net.

Anyone who has watched children at their play knows how strongly they tend to a dramatic representation of their ideas. How can this dramatic tendency be utilized in education? The author discusses the theater-going of children and points to many instances where the experiences of the theater have so stimulated and vivified interest in composition, history, and general affairs that they have had a marked effect upon school work. The author believes that there should be a constructive effort to provide children with good drama. They should not only be encouraged to go to see good plays, but they should be trained to appreciate these plays by dramatic work in the schoolroom itself. Other chapters discuss play, dancing, story-telling, puppet plays, and pageantry. There is a bibliography of fifteen pages, and a vigorous introduction by G. Stanley Hall.

HENRY S. CURTIS. *Education Through Play.* New York: The Macmillan Company, 1915. Pp. xix, 359. $1.50 net.

This book is the best and most authoritative statement yet issued of the theory and present status of play in its relation to education. The author reserves the discussion of public recreation for a subsequent volume, and another volume on the proper conduct of play is promised at once. An introductory chapter on the various theories of play is followed by a discussion of the effect of play upon physical and mental training and upon character. Chapters 5 and 6 discuss play in German and English schools. Chapters 7 to 9, inclusive, consider play in relation to American school conditions, with special emphasis upon the system at Gary, Ind. The remaining chapters take up such topics as play in the curriculum, athletics, summer recreation grounds, playgrounds, school camps, and the training of play teachers. An appendix contains the rules for a representative number of games to be played by school children. It is a valuable practical contribution to the utilization of the play impulse in connection with school work.

FLETCHER B. DRESSLAR. *Rural Schoolhouses and Grounds.* Bulletin No. 585. Washington: Bureau of Education, 1914. Pp. 162.

This bulletin will be very useful for rural school authorities who

are planning the construction of new buildings. It is abundantly illustrated with floor plans and elevations, and there are forty-four plates, reproducing photographs of good school buildings.

HENRY R. EVANS. *Library Instruction in Universities, Colleges, and Normal Schools.* Bulletin No. 608. Washington: Bureau of Education, 1914. Pp. 38.

A brief account of the curricula of library instruction in the institutions of higher education in the different States.

H. W. FOGHT. *Danish Elementary Rural Schools, with Some Reference to Seminaries for the Training of Rural Teachers.* Bulletin No. 598. Washington: Bureau of Education, 1914. Pp. 45.

The report deals with school organization and management, school architecture, preparation and tenure of teachers, salaries and pensions, and school maintenance. There are many photographs of rural schoolhouses.

WILLIAM BYRON FORBUSH. *Manual of Play.* Philadelphia: George W. Jacobs & Co., 1914. Pp. 353. $1.50 net.

This is a practical and popular book intended chiefly for parents and the general public. The author discusses fittings of the home playroom, the home yard, the types of play in which children from one and a half to fifteen years of age engage. Play with dolls, laughter plays, plays of mimic life, impersonation, constructive play, outdoor play, Sunday play, and neighborhood plays are all considered. The book will be found especially useful to mothers who are desirous of finding something for their children to do.

JOSEPH M. GWINN. *Annual Report of the New Orleans Public Schools,* 1914. Pp. 249.

In addition to the report of the division of educational research on educational measurements, there are tables giving enrollment statistics by grades, distribution of pupils within grades, and the comparison of enrollment and attendance. There is an interesting report on a speed and accuracy test in arithmetic, another on the efficiency of kindergarten trained children, and one on oral hygiene.

CHARLES HARRIS. *A German Grammar.* Cincinnati: American Book Co., 1914. Pp. 352.

A well-arranged, clearly-written school text.

WILLIAM HEALY. *The Individual Delinquent. A Textbook of Diagnosis and Prognosis for All Concerned in Understanding Offenders.* Boston: Little, Brown & Co., 1915. Pp. xvii, 830. $5.00.

In this massive volume the author gives an account of the purposes of the Juvenile Psychopathic Institute, and the history of the five years of its existence. Book One deals with general data, such as

the point of view from which the researches were undertaken, the limits of the field of study, the personality of the individual, the mental basis of delinquency, the methods of investigation, mental tests, statistics, and general conclusions. Book Two presents a detailed study of individual cases, types of delinquency, and causative factors. As in a medical textbook, the accounts of cases are brought forward as illustrative of points of view developed in the discussion. Such general topics are heredity, developmental factors, physical peculiarities, stimulants and narcotics, environmental factors, criminalism as a result of choice, mental imagery, habits, mental conflicts, epilepsy, mental defect, mental aberration, mental peculiarities, and cases of pathological stealing, arson, etc. In the discussion of mental tests there are excellent plates illustrating tests devised by Dr. Healy, and the text supplies directions for their use. While from the psychological point of view the work leaves much to be desired, the detailed description of over a hundred and seventy cases furnishes a mine of material for comparative studies. There is a bibliography of eighteen pages and a good index.

DAVID SPENCE HILL. *Measurements in Elementary Education.* An extract from the annual report of the Superintendent of Schools in New Orleans, September, 1914. Pp. 71.

This is the report of the division of educational research, and embraces studies of the progress of 36,284 school children in New Orleans, an account of the educational laboratory, and some considerations on industrial education. There are numerous tables and charts showing the number of over-aged children by schools, the progress of pupils in schools, and suggestions for the practical use of the data collected.

J. N. HUNT. *Modern Word Book for Primary Grades. An Elementary Course in Phonetics and Spelling.* Cincinnati: American Book Co., 1914. Pp. 80.

This is a new speller for the first and second grades. The lessons are grouped around an illustration which expresses action. The words are first given in column, and then arranged in story form. At the bottom of each page is a list of words for drill in phonetics.

GEORGE W. JACOBY. *Child Training as an Exact Science. A Treatise Based Upon the Principles of Modern Psychology, Normal and Abnormal.* New York: Funk & Wagnalls Co., 1914. Pp. xv, 384. $1.50 net.

The author states that a treatise on child training as an exact science has seemed to him to be an urgent necessity. One may be permitted to doubt whether his idea of exact science corresponds with that of the physicist or the chemist. The discussion in this book is far from being either exact or scientific. It consists of a series of very general observations on the development of the nervous

system, the intellectual development of children, psychic abnormalities of childhood, and a casual discussion of the means that may be used in training parents and children to secure a complete all-round development. The book is written chiefly from the medical viewpoint, and represents the author's attempt to popularize what he considers important in paidological science.

CHARLES H. JUDD. *The Training of Teachers in England, Scotland, and Germany.* Bulletin No. 609. Washington: Bureau of Education, 1914. Pp. 84.

Although we already have a considerable number of works on the training of teachers in various European countries, this report of first-hand observation by one who has specialized in the training of teachers is of great interest and of decided value. It is noteworthy that a distinct effort is being made to bring the teachers of the *Volksschule* into contact with the universities. A striking feature in the preparation of teachers in all these countries is the rigid examination, or series of examinations, which candidates have to undergo before they are certified as prepared to teach.

JOSEPH KAHN AND JOSEPH J. KLEIN. *Principles and Methods in Commercial Education.* New York: The Macmillan Company, 1914. Pp. xiv, 439. $1.40 net.

This is primarily a book for teachers and for the training of teachers in commercial education. It represents the results of extended experience in teaching and of serious reflection upon the principles involved. Part one deals with the value of business education, the course of study, and the general principles of method. In the discussion of method the authors do not progress far beyond the trite topics of self-activity, interest, perception, and proceeding from the concrete to the abstract. Part two develops methods in the special subjects of commercial education, as business arithmetic, bookkeeping, accounting, commercial geography, commercial law, history of commerce, economics, stenography, and typewriting. In part three the preparation and equipment of the commercial teacher are sketched, and the relation of the secondary school to the high school of commerce is pointed out.

OTTO KLEMM. *A History of Psychology.* Authorized translation from the German by Emil Carl Wilm and Rudolph Pintner. New York: Chas. Scribner's Sons, 1914. Pp. xiv, 380.

With the remarkable growth of psychology as a subject of experimental science and as a college discipline, there is manifest an increasing demand for a work that will open up for the student a perspective of the history of the subject. To fill this want is the purpose of the present volume. Part one deals with the general tendencies of psychology, describing the dualistic and monistic systems of psychology, the development of descriptive psychology, and the

transition to and growth of explanatory psychology. Part two deals with the development of the fundamental concepts of psychology, and discusses psychology as a science, the subject-matter of psychology—that is, consciousness—the classification of the contents of consciousness, psychological methods, and psychological measurements. Part three recounts the most important theories in the history of psychology, including theories of sensation, theories of space perception, theories of feeling, and theories of volition. The style is clear and lucid, and the work will be a valuable addition to the resources of the student of psychology.

WILLIAM A. MCKEEVER. *The Industrial Training of the Girl.* New York: The Macmillan Company, 1914. Pp. xi, 82. 50 cents net.

This is a condensation of the first part of the author's larger work on training the girl. While there is much good advice of the type that we are accustomed to hear in Sunday-schools, the continued moralizing becomes somewhat cloying to the taste. There is little evidence of any accurate or scientific analysis of the problems involved in the industrial training of the girl.

A. C. MONAHAN. *County-unit Organization for the Administration of Rural Schools.* Bulletin No. 618. Washington: Bureau of Education, 1914. Pp. 56.

There is an introductory discussion of the three types of organization now existing—the district unit, the township unit, and the county unit. The general outlines of county systems are sketched, and there is an account of the way in which the organization is effected and the results which accrue from it. Concluding sections compare consolidated with unconsolidated districts in Utah and Tennessee.

FRANCES M. MOREHOUSE. *The Discipline of the School.* New York: D. C. Heath & Co., 1914. Pp. xviii, 342.

In her discussion of discipline the author has endeavored to steer a middle course between the "soft pedagogy" which ignores social obligations and the blind severity which denies social advantages. "Discipline is inexorably sure of its authority, and sternly firm, but it recognizes the right of self-government which comes as the reward of trustworthiness, and the joy that comes from happy co-operation." The principal topics discussed are modes of school government, school discipline and American life, the disciplinary process, analysis of offenses common in American schools, punishment, and disciplinary devices. The book aims to be practical rather than profound, and contains many observations with which the experienced teacher will find himself in complete agreement.

HARRIET B. OSBORN. *Rural School Libraries at Small Cost.* Worcester, Mass.: State Board of Publication, 1914. Pp. 7.

Selected lists of books suitable for various grades. The sets can be purchased for five, ten, and twenty-five dollars.

RUDOLF PINTNER. *One Hundred Juvenile Delinquents Tested by the Binet Scale.* Reprinted from the Pedagogical Seminary, Vol. XXI, December, 1914. Pp. 523-531.

Of the one hundred boys and girls tested, the author finds thirty-three normal, twenty-one backward, and forty-six feeble-minded. The author concludes that the bad boy is not a clever boy; as a rule, he is decidedly stupid.

DANIEL STARCH. *Advertising: Its Principles, Practice, and Technique.* Chicago: Scott, Foresman & Co., 1914. Pp. 281.

This little volume is intended as a first textbook for students, and as an introductory handbook for business men. The treatment is, therefore, simple rather than technical, and there is a large number of illustrations and graphs to clarify and elucidate the text. There is an interesting discussion of the attention values of different types of advertising, the effect of contrast, the results yielded by different types of advertising mediums, the effect of repetition and follow-up methods, and tests of the strength of advertisements. The book contains a large number of interesting facts, and will prove suggestive to the advertiser who desires a somewhat scientific background for his efforts.

FREDERICK WILSON TRUSCOTT AND SIMEON CONANT SMITH. *Elementary German Composition.* Cincinnati: American Book Co., 1914. Pp. 150.

In part one there is a brief statement of the most important rules in German grammar, and the exercises for translation into German in part two are illustrative of these rules.

RAYMOND LOWREY WALKLEY. *Bibliography of the Relation of Secondary Schools to Higher Education.* Bulletin No. 606. Washington: Bureau of Education, 1914. Pp. 57.

An annotated bibliography, covering practically all the literature on the subject that has appeared during the last ten years.

JOHN W. WAYLAND. *How to Teach American History.* New York: The Macmillan Company, 1914. Pp. x, 349. $1.10 net.

"This volume is intended for use as a textbook in normal schools, teachers' training schools, and teachers' institutes, and as a handbook for the teacher and student in school or at home. Special emphasis has been placed upon the moral values of history in normal social relations." Various chapters treat of the aims in the teaching of history, the time to begin history, history in the grades, the high school, the normal school, the uses of the story and of dramatics in teaching history, helps in teaching pupils to study, pupils' interests in history, the use of sources, and various devices to assist the teacher. The book is practical and suggestive, and should contribute much to increase the efficiency of history teaching.